Appendix of Evidence

Appendix of evidence & equine reports submitted

1. A Review – Large Scale Infrastructure Projects and Their Impact on Stud Farms by D.P. Leadon, Irish Equine Centre, Kildare, Ireland
Author affiliations - W.M.Bayly, Washington State University and D. R. Hodgson, University of Sydney

2. Celia Marr – Expert comment to Kildare County Council. *European specialist in Equine Internal Medicine*

3. The Impact on Noise Anxiety on behaviour and welfare of horses from UK and US Owner's Perspective August 2022 by Frank Van Eerdenburg. *Citation - Maria Giorgia Riva, Francesca Dai, Mirja Huhtinen, Michela Minero, Sara Barbieri and Emanuela Della Costa*

4. **Lime Down April 2026 - Equine Veterinary and BESS Safety Evidence -** CVS Equine/ *Troytown Equine Hospital, Hugh Dillon MVB cert ESM MRCVS*

5. Lime Down vet report – Chris Shepherd BVSc MRCVS

6. Lime Down vet report – George Gemmell, DVM, MRCVs, Gibbs Marsh Equine (Dorset)

7. Lime Down vet report – Dr. Annemarie Farrington Senior equine veterinary surgeon and equine sports medicine biochemmist

8. Morgan and Morecambe – Managing equestrian noise at Equestrian Receptors *Technical Note – 22 October 2025*

9. Racing could be the next victim of net zero battery obsession – **The Telegraph** April 2025

10. Racing Post – Lime Down Stud owners under threat – June 2024

11. Racing Post – Lime Down Stud farmers in limbo amid anxious wait for solar farm resolution.

12. **Horse & Hound** - electrocution caused by cable under parade ring at Newbury Racecourse

13. Irish Field – Bloodstock industry warned of treat from solar battery projects – March 2025

14. OBS March Sales results evidence

15. Cleve Hill noise reading - https://www.facebook.com/share/v/19Pr1ftnJL/?mibextid=wwXIfr ■

16. Reform letter to Macquarie Dec 25 – notice of removal of subsidies

17. Claims Vs Reality

18. local socio-economic email to Wilts county council – Russell Frith

19. Lime Down Solar grid connection Freedom of Information request

20. Freedom of Information request for Macquarie, IGP, NESO & DESNZ – Gate 2 grid cone tion

21. Freedom of Information request response – to the above

22. Copy of original cable route land owners Heads of Terms

23/24 & 25 – Evidence of the noise monitoring (trespassing).

D. P Leadon Review: This evidence demonstrates that this is not an area of uncertainty, but one where existing scientific and observational knowledge has not been properly applied. Horses are biologically adapted to respond to environmental change, with noise, movement and visual disturbance triggering predictable behavioural and physiological reactions. These responses are particularly pronounced in breeding environments, where mares and foals are more vulnerable. The use of inappropriate comparator studies, such as racecourse noise exposure, further undermines the reliability of the assessment. Importantly, commonly proposed mitigation measures have been shown to be ineffective or impractical, meaning that the fundamental issue is one of location rather than mitigation.

- The evidence base is not absent; rather, it has been overlooked or misapplied, with existing scientific and observational data clearly identifying risks to equine welfare.
- Horses are neurologically adapted to detect and respond to potential threats through multiple sensory pathways, making them inherently reactive to environmental change.
- Evidence shows that the majority of horses exhibit immediate flight responses to perceived threats, with a significant proportion sustaining injury during such events.
- Noise-related stress responses in horses can persist for extended periods, meaning impacts are not limited to the duration of the stimulus itself.
- Construction and operational noise levels associated with large-scale infrastructure exceed typical stud farm baseline conditions by several orders of magnitude.
- The use of racecourse or controlled-environment studies as comparators for breeding environments is scientifically inappropriate and has been explicitly disavowed by their own authors.
- Pregnant mares and foals are particularly vulnerable, with evidence linking environmental disturbance to disrupted gestation, impaired bonding and developmental instability
- Evidence indicates that commonly proposed mitigation measures, including stabling, sedation and relocation, are often ineffective or impractical in managing equine responses to environmental disturbance.
- Report identifies impact on insurance and investment for equine businesses suggesting insurance may be withdrawn or become invalid which will likely make investors relocate horses.
- The report confirms other countries apply a 1km buffer zone and equine specific planning rules which show this is a recognised issue globally and not spectulative.

Celia Marr Report: Toxic gas exposure risk is severe and scientifically evidenced – specialist veterinary evidence confirms that lithium-ion battery fires can release highly toxic gases, including hydrogen fluoride, capable of forming airbourne plumes at concentrations that are dangerous and lethal to animals in the surrounding area.

- Horses are uniquely vulnerable to inhaled toxins due to their large lung surface area and high respiratory demand, meaning that even low level exposure can result in significant respiratory damage.
- Even low level exposure to airborne pollutants can damage equine respiratory tissue, increasing the risk of conditions such as asthma and inflammatory airways disease, which are known to be performance limiting and commercially significant in bloodstock operations.
- In fire and emergency situations, horses at pasture cannot be safely controlled, and serious injuries frequently arise not from direct exposure but from panicked herd flight, with animals galloping blindly and sustaining trauma.
- Evidence from comparable incidents demonstrates that toxic plumes from battery fires can extend over several miles, meaning impacts cannot be confirmed to the immediate boundary. *(Moss landing USA requiring 7km exclusion zone)*
- Report confirms that the presence of large scale battery infrastructure in close proximity to stud farms is likely to undemand confidence in the area, discouraging the placement of high value bloodstock and affecting long term industry viability.

Construction Noise report:
Developer-led technical evidence confirms that horses are highly sensitive to sudden noise, movement and vibration, and that these stimuli can trigger flight responses. It also confirms that there is no standard methodology for assessing construction noise impacts on horses and that mitigation must be tailored to individual receptors with input from equine specialists. This highlights a fundamental gap in the Lime Down assessment, which applies generic human-based noise thresholds and does not include any meaningful equine-specific or veterinary-led evaluation.

- Even developer-led technical assessments confirm that sudden noise and movement are key triggers for equine flight response.
- The evidence confirms that there is no established methodology for assessing construction noise impacts on horses, and that such impacts are typically only considered after concerns are raised during examination
- Evidence shows that horses vary significantly in their sensitivity to noise, requiring receptor-specific assessment and mitigation rather than a generic approach
- Horses perceive sound differently from humans, with a wider hearing range and heightened sensitivity to frequencies commonly produced by construction and electrical infrastructure
- Emerging evidence indicates that horses can detect and respond to vibration from machinery and vehicles, yet this has not been meaningfully assessed
- Proposed mitigation relies on stopping works or relocating horses, which is not feasible in continuous breeding and grazing environments
- The evidence confirms that effective mitigation requires equine veterinary expertise, reinforcing the absence of such input in the Lime Down assessment.

Appendix 1 - A Review – Large Scale Infrastructure Projects and Their Impact on Stud Farms

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 (Gronquvist 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 (Gronquvist 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 to 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.) 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 (Gronquvist, 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 ibn 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.

DECLARATIONS

- Availability of data and materials – Not applicable
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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. Dr Leadon is the part-owner of a small equine studfarm.

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Appendix 2 - BESS Fire Impacts on Horses, Celia Marr (RCVS and European Specialist in Equine Internal Medicine)

ROSSDALES
VETERINARY SURGEONS

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 Pleanala 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).

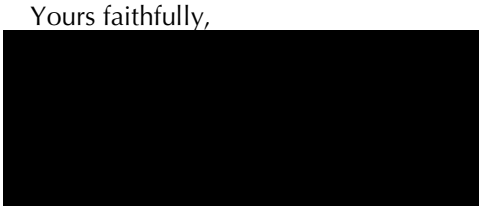
Many of the horses being reared in Kildare are kept at pasture: there is real danger to these horses if frightened by fire, smoke and the attendant fire brigade services. Being injured in a fire is a horrible and life-threatening experience for a horse, just as it is for humans. However, it is well recognised 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 Gilltown 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 Gilltown 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,



Celia M. Marr, BVMS, MVM, PhD, DEIM, DipECEIM, FRCVS

RCVS and European Specialist in Equine Internal Medicine.

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Appendix 3 - The Impact on Noise Anxiety on behaviour and welfare of horses

animals

MDPI

Article

The Impact of Noise Anxiety on Behavior and Welfare of Horses from UK and US Owner's Perspective

Maria Giorgia Riva [1,†], Francesca Dai [2,†], Mirja Huhtinen [3], Michela Minero [1], Sara Barbieri [1] and Emanuela Dalla Costa [1,*]

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Simple Summary: Being a prey species, horses evolved to rapidly react to potential danger and loud noises may be perceived as such. Therefore, they can exhibit several anxiety behaviors during noisy events, including sweating, trembling and escape attempts, which may cause severe accidents for the horse and the rider/handler. Since noise anxiety can significantly impact on horse welfare, the aim of the present study was to investigate owners' perception of noise anxiety severity in their horses, their management strategies and perceived efficacy. In a survey, 409 out of 1836 owners reported that their horse shows unusual behavior during a noise event. Among those, two noise anxiety clusters could be identified: very and slightly anxious horses. Very anxious horses were reported to have higher frequency of all anxiety behaviors and higher frequency of signs of noise reactivity; furthermore, their anxiety did not improve with time. The most frequently used management strategies were providing hay throughout the night or turning out or moving horses to a paddock; though, most of these techniques were reported to be effective only in the slightly anxious subjects. Our results confirmed that noise anxiety is a widespread behavioral problem (22% of our respondents reported that their horse had ever shown any unusual behavior in relation to loud noises) that can lead to negative welfare consequences for horses.

Abstract: Noise anxiety is an over-reaction to loud noises commonly detected among pets and can greatly impact on their welfare and on their management. When exposed to noisy events, horses can show intense escape attempts, which may cause severe accidents for the horse and the rider/handler. The aim of the present study was to investigate, through a web survey, UK and US owners' perception of noise anxiety severity in their horses, their management strategies and perceived efficacy. The questionnaire was shared via social networking and advertised as "What is your horse afraid of?". Over a total of 1836 questionnaires filled out; 409 owners reported that their horse has shown unusual behavior during a noise event. A two-step cluster analysis identified two groups: very anxious (VA) and slightly anxious (SA). VA horses were reported to have higher frequency of anxiety behaviors; higher frequency of signs of noise reactivity; and their anxiety did not improve with time. The most used management strategies consisted in providing hay throughout the night, turning in/out their horse or moving it to a paddock. A binomial logistic regression identified that horses that have reported injuries during noise events were more likely to be clustered as VA (OR = 0.24, 95% CI: 0.08–0.76); while providing hay throughout the night was more likely to be very effective management strategy in SA horses (OR = 0.41, 95% CI: 0.16–1.01). Our results confirmed that noise anxiety is a growing behavioral problem that can lead to important welfare concerns for horses. New management strategies, including the use of medicinal products, should be considered to reduce behavioral and physiological signs and help horses to cope with noisy events.

Keywords: noise anxiety; horse welfare; management strategies; fear behavior

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1. Introduction

Fear can be defined as a reaction to the perception of actual danger, while anxiety as the reaction to a potential danger that threatens the individual [1]. Reaction to fear elicits behavioral and physiological modifications [2], such as active defense (attack, menace), active flight (hiding, escape) and passive avoidance (freezing) [3], heart rate and heart rate variability variations [4–9] and rising in cortisol concentration [10–12]. Horses can exhibit several behaviors as fear reaction, including sweating, trembling and escape attempts, which may be particularly dangerous, causing severe accidents for the horse and the rider/handler [4,13–15].

Noise can be described as unwanted sound, eliciting disagreeable feelings in the listener [16]. The response of animals to a certain noise, is determined not only by sound intensity, loudness, frequency, duration and pattern, but also by the animal's previous experience and the acoustic stimulus predictability [17]. Exposure to unknown sounds could elicit stress in animals [16,18–21]. For instance, aircraft and helicopter noise has been reported to affect feed intake, growth and production rates in domestic animals [22–24]. Compared with chronic background or repetitive noise, sudden high intensity unpredictable noises cause greater fear reactions in mammals, including startle response, freezing and fleeing from the sound source [16].

"Noise aversion" or "noise anxiety" occurs when an animal over-reacts to loud noises [25–27]; this phenomenon is well studied in pet dogs. Reported behaviors of dogs experiencing noise anxiety comprise trembling, shaking, salivating, hiding, panting, pacing, restlessness, inappropriate elimination, soliciting human attention, escaping confinement, hiding, destruction, loss of appetite or barking [27–29]. Data suggest that the prevalence of noise anxiety in dogs could reach 49% [26], representing indeed a serious welfare problem. Thunderstorms, fireworks and gunshots are the most commonly reported anxiety-eliciting sounds [25,26], a common characteristic is to be loud explosive noise. Other sound reported to cause anxiety problems are loud sounds on TV, cars backfiring and hoovers [26]. Evidence suggest that dogs commonly generalize fear of one to other noises [26].

Being a prey species, sensory systems of horses evolved to enable a prompt detection of potential danger, throughout a combination of visual, auditory and olfactory cues [14,30]. Compared to visual and olfactory stimuli, unexpected unknown noises seem to elicit rapid flight reactions more frequently [14,31].

Among other noise events, fireworks are the commonest sound causing a fear response [26]. Fireworks may elicit fear reactions in animals, including horses, due to unpredictable, intermittent and high-intensity sounds, with light flashes, odors and changes in barometric pressure [32–34]. Anxiety behaviors related to fireworks are very commonly detected among pets. In a survey conducted in New Zealand, 74% of owners reported their dog or cat to experience noise anxiety caused by fireworks [35]. The reported prevalence of noise anxiety in dogs ranges between 23% and 52% [26,29,36–38]. Breed, genetics, age, health conditions and environment are recognized risk factors for noise anxiety in dogs [26,36–38]. Full recovery from fireworks-related fear is reported to happen the next morning in 75% of dogs, while some subjects may even display milder symptoms for days or weeks after [38]. This clearly represents an animal welfare problem. Compared to dogs, cats are more likely to exhibit behaviors such as hiding or cowering in response to frightful noise stimulation, which owners often fail to correctly interpret as sign of anxiety [29]. Therefore, cat's noise anxiety caused by fireworks is less frequently reported by owners [29,39].

While a number of publications describe the incidence of fear behaviors in response to fireworks in dogs and cats [26,29,32,40], only few studies are published on horses. Gronqvist and colleagues [33] reported that 79% of horses in New Zealand were rated as anxious or very anxious around fireworks by their owners, and, as a consequence, 26% obtained injuries during fireworks. Young and colleagues reported that horses, listening to the sound of fireworks played from compact disk, had higher cortisol levels, indicative of anxiety, than horses reacting to sound from coat clippers or being kept in social isolation [41].

Moving the horse to a paddock away from the fireworks was reported by Gronqvist and colleagues [33] to be the most common management strategy adopted to mitigate this problem; the paper highlights, however, that 37% (374 out of 779) of the respondents reported that this management strategy was ineffective. In dogs and cats, several therapies are described to manage and eventually even overcome noise anxiety and fear. Generally, the condition can be treated using a system of desensitization and counter-conditioning [42], but this may take several weeks. As an immediate solution during the fireworks event, medications such as sedatives and anxiolytics can be used to manage the animal behavior [32,34,42–44]. To reduce animal's reactivity by sedation, Acepromazine has been used for decades, but it can often give disappointing results and cause undesirable side-effects [45,46]. Therefore, benzodiazepines, such as diazepam, or serotonin reuptake inhibitors are now recommended to provide an immediate anxiolytic effect during the anxiogenic event [47]. Diazepam is commonly used [48] and its reported efficacy is generally good [49], however adverse side effects include aggression, sedation and ataxia [45,49]. Moreover, undesirable effects of benzodiazepines includes a reduction of conditioned responses and memory deficits, thus potentially compromising behavioral modification [45]. The use of Detomidine for alleviation of anxiety during noisy events have been tested both in dogs [50] and in horses [34]. The studies suggest that this drug has a good efficacy in reducing anxiety-related behaviors, as reported by owners. While in horses no side-effects have been reported, in dogs observed side-effects included emesis, gastroenteritis, periorbital edema, drowsiness and sedation. The use of Detomidine for this purpose in horses, indeed, is off-label and more studies are needed to confirm its efficacy and safety [34].

To the authors knowledge, no data on horse anxiety around other noises are published. While owners can easily recognize noise anxiety in pet since they share the same house, noise anxiety in horses may not have taken very seriously, probably due to the fact that it is not obvious for owners if they are not around during the noise event [51].

Housing condition has an impact on horse reactivity. Single box housing is recognized as a risk factor for the development undesired behaviors, such as stereotypies, aggressiveness, hyperreactivity or unresponsiveness [52–59]. Lesimple and colleagues [60] demonstrated that horses housed in single boxes exhibit more strong reactions to unknown stimuli and are more prone to express "high locomotory components", thus increasing risks of accidents. Since noise anxiety can significantly impact horse welfare, the aim of the present study was to investigate, through a web survey, UK and US owners' perception of noise anxiety severity in their horses, the management strategies adopted to reduce anxiety behaviors, and their perceived efficacy.

2. Materials and Methods

2.1. Ethic Statement

Horse owners entered the study on a voluntary basis, they were informed about the objectives of the project. The study did not focus on human subjects or human data, no sensitive data were collected, it was not possible to identify the participants from the raw research data. Ethical consent was deemed unnecessary as no personal details of the participants were recorded and the EU Regulation No. 2016/679 does not apply.

2.2. Online Questionnaire

An online questionnaire was created using the commercial survey software Webropol Survey Analytics (Webropol Ltd., Helsinki, Finland). The defined target population was horse owners located in United Kingdom and United States. The questionnaire and its advertisement were written in English, for this reason and because of their renowned equestrian tradition the survey was conducted in these two Countries. The estimated horse population in Britain stands at 847,000 base on BETA National Equestrian Survey 2019 data [61], and American one at 3.8 million in 2017 [62]. Invitations to contribute to the survey were shared via social networking sites (Facebook, Meta Inc., Menlo Park, CA, USA) with the advertisement "What is your horse afraid of?" on a horse picture.

By clicking on the picture, respondents had access the questionnaire; separate links for UK and US were created. The questionnaire was open for one month (April 2018), and it could be completed anonymously. Participants were required to be over the age of 18, therefore Facebook's customers of age were selected, but no IP address or any other personal data were recorded. The questionnaire was organized in two parts, the first one included three multiple-choice questions (Table S1). Only the respondent who answered "yes" to the question "Has your horse ever shown any unusual behavior (e.g., restlessness, sweating, decreased appetite) during noisy events such as firework displays?" could access the second part of the questionnaire. The second part of the questionnaire consisted of 16 multiple-choice questions reported in Table S1. Closed-ended questions were chosen as it is reported that customers are more likely to respond and answers are easier to compare. The questions were formulated to be as consistent as possible with previous publication, Gronqvist's study [33]. For three questions (e.g., Which of the following behaviors has your horse shown during noisy events?; In your opinion, which are your horse's three most alarming behaviors related to noise reactivity?; Please indicate if you have tried the following management strategies for your horse during noisy events such as firework displays in previous years and how effective the management strategy was) the option "other (specify)" was provided, however, the collected answers were sometimes irrelevant (not related to the question) and sometimes difficult to interpret; for this reason they were excluded from statistical analysis.

2.3. Statistical Analysis

Data were analyzed with SPSS statistical package (IBM SPSS Statistic 27). For statistical analysis purposes dichotomous variables (Yes/No) were created for the replies to the questions "In your opinion, which are your horse's three most alarming behaviors related to noise reactivity?". Descriptive statistics including relative proportions were calculated. Anxiety behavior score was calculated adding the frequency (Never = 0; Sometimes = 1; Always = 2) of anxiety behaviors reported by horse owners. A two-step cluster analysis with automatic determination of the number of clusters was performed on the anxiety behavior score to identify groups of horses that were similar to each other for the considered variables. The association between horses' anxiety level identified with cluster analysis and other independent variables was investigated using binomial logistic regression, reporting odds ratios with 95% CIs. Differences were considered to be statistically significant if $p < 0.05$.

3. Results and Discussion

A total of 1836 questionnaires were correctly filled out, the majority coming from respondents living in the United Kingdom (n = 1220, 66%); this could be due to a diverse use of social media. Main information about owners and horse population are showed by Table S2. Most of the respondents owned one horse (n = 928, 50%), followed by respondents owning two or more horses (n = 846, 46%); only 51 (less than 3%) respondents did not own any horse. These last ones were considered in the survey because they actually managed their horses, even if without real possession (lease or half lease contracts). Considering the experience with horses, 114 respondents (6%) reported to have less than 2 years of experience with horses, 236 (13%) had between 2 and 5 years, while most of the respondent had from 6 to 20 (n = 754, 41%) and over 20 years of experience (n = 726, 40%). As shown also by surveys carried out in Sweden and Finland, by owning one or more horses there is a higher probability to be involved in noise anxiety episodes, and therefore be attracted to this kind of survey on the internet [63]. Likewise, the longer experience with horses the respondents had, the higher the probability to have ever observed a noise anxiety-related behavior. Only 409 owners (22%) reported that their horse had ever shown any unusual behavior and, therefore, completed the second part of the questionnaire. This result is lower than what was found in New Zealand by Gronqvist and colleagues [33], where 79% of participants reported their horse to be anxious or very anxious during fireworks display.

Furthermore, Lindstedt's survey reported higher percentages: 30% of Finnish participants and 55% of Swedish ones answered that their horse has shown signs of noise anxiety during loud noise events [63]. A subset of 376 informative answers in our survey were selected for further statistical analysis: questionnaires where owners left blank or answered "don't know" for more than half of the questions were excluded (n = 33). A two-step cluster analysis identified two clusters based on the anxiety score: forty-eight percent (n = 181) of the horses were assigned to the first cluster and fifty-two percent (n = 195) to the second. Horses in the second cluster showed a higher frequency of all these anxiety behaviors compared to horse in the first one. Therefore, cluster 1 was labelled as "slightly anxious" (SA) and cluster 2 as "very anxious" (VA).

3.1. Horse and Stable Characteristics

In the SA cluster, most of the horses were adults: only one horse was younger than 1 year old, a few from 1 to 5 years old (12%), the majority between 6 and 15 years old (59%) or over 15 years (29%). Horses clustered as VA were characterized by a similar age distribution: no horse was younger than 1, 6% was between 1 and 5 years, 60% of the horses ranged from 6 to 15 years old and 34% was older than 15 years. The VA cluster comprised a higher number of geldings (65%) and a lower number of mares (35%) compared to the SA, respectively, 54% and 46%. A lot of different and specific breeds were reported; therefore, they were grouped in three major categories (hotbloods, warmbloods and coldbloods) to simplify the data analysis. The majority of respondents reported to own warmbloods (SA 52%; VA 49%), followed by coldbloods (28% and 26%, respectively) and hotbloods (SA 17%; VA 22%). The most common use for these horses was riding (show jumping, dressage and eventing), followed by leisure and western riding activities. Only a few horses were retired, or used for breeding or driving. The majority of the survey participants reported to keep their horses in a rural (surrounded by farms) or semi-rural (adjacent to an urban area) location. A greater proportion of participants reported checking their animals during noisy events (SA 81%; VA 92%).

3.2. Anxiety Behavior

Noise anxiety was displayed through a variety of anxiety behaviors (e.g., fence/box walking, running, appetite loss, diarrhea, breaking fence, weaving, bucking, sweating, fever, trembling and vocalization). The frequency of different behaviors showed during noisy events in each cluster is reported in Table 1. Most of the anxiety behaviors were reported to be exhibited with "sometimes" frequency. This was particularly true for the VA cluster, while SA horses' owners have rarely observed behaviors such as diarrhea, fever, or breaking fences. These results already highlight the different level of arousal between the two categories. The higher anxiety level in VA horses causes more severe consequences both from physiological and behavioral perspective.

Table 1. Percentage of fear and anxiety behaviors shown during noisy events by horses in each cluster (slightly anxious and very anxious).

Behavior	Frequency	Slightly Anxious (SA) n = 181	Very Anxious (VA) n = 195
Fence/box walking	Always	5 (3%)	54 (28%)
	Sometimes	117 (65%)	127 (65%)
	Never	52 (29%)	10 (5%)
	Don't know	7 (4%)	4 (2%)
Running	Always	5 (3%)	43 (22%)
	Sometimes	121 (67%)	137 (70%)
	Never	49 (27%)	12 (6%)
	Don't know	6 (3%)	3 (2%)

Table 1. *Cont.*

Behavior	Frequency	Slightly Anxious (SA) *n* = 181	Very Anxious (VA) *n* = 195
Appetite loss	Always	2 (1%)	23 (12%)
	Sometimes	56 (31%)	117 (60%)
	Never	114 (63%)	49 (25%)
	Don't know	9 (5%)	6 (3%)
Diarrhea	Always	1 (1%)	16 (8%)
	Sometimes	41 (23%)	106 (54%)
	Never	133 (73%)	68 (35%)
	Don't know	6 (3%)	5 (3%)
Breaking fence	Always	0 (0%)	4 (2%)
	Sometimes	23 (13%)	74 (38%)
	Never	155 (86%)	110 (56%)
	Don't know	3 (2%)	7 (4%)
Weaving	Always	2 (1%)	18 (9%)
	Sometimes	46 (25%)	87 (45%)
	Never	124 (69%)	83 (43%)
	Don't know	9 (5%)	7 (4%)
Bucking	Always	2 (1%)	24 (12%)
	Sometimes	84 (46%)	119 (61%)
	Never	94 (52%)	46 (24%)
	Don't know	1 (1%)	6 (3%)
Sweating	Always	1 (1%)	38 (19%)
	Sometimes	107 (59%)	150 (77%)
	Never	70 (39%)	7 (4%)
	Don't know	3 (2%)	0 (0%)
Fever	Always	0 (0%)	3 (2%)
	Sometimes	3 (2%)	24 (12%)
	Never	166 (92%)	128 (66%)
	Don't know	12 (7%)	40 (21%)
Trembling	Always	1 (1%)	30 (15%)
	Sometimes	71 (36%)	128 (66%)
	Never	105 (54%)	32 (16%)
	Don't know	4 (2%)	5 (3%)
Vocalization	Always	3 (2%)	32 (16%)
	Sometimes	92 (47%)	129 (66%)
	Never	79 (41%)	27 (14%)
	Don't know	7 (4%)	7 (4%)

Fence/box walking and running were the most observed activities, immediately followed by sweating. Running was also the most noted sign found in Gronqvist and colleagues' study [33], whereas in Lindstedt's survey general anxiousness was the most reported sign, followed by decrease appetite, diarrhea or increased defecation, running in the box and sweating [63]. The odds of horses showing walking or running behaviors with a "sometimes" frequency was quite similar between the two clusters. However, 28% and 22% of VA horses' owners reported that their animals "always", respectively, walk or run during a noisy event, while 29% and 27% of SA horses have "never" shown, respectively, walking or running behaviors. A peak of 150 VA horses (77%) and 107 SA ones (59%) sweated with a "sometimes" frequency. Conversely, 39% of SA horses and only 4% of VA horses have "never" sweated during noisy events. A few respondents reported gastrointestinal symptoms: many of the horses classified as VA have "sometimes" shown appetite loss (60%) and/or diarrhea (54%), whereas SA subjects were quite unlikely to experience these conditions. Even though fever was a symptom that showed up rarely in the survey, 3 participants have "always" observed an increase in body temperature.

VA horses appeared to be more likely to break fences (40%) than SA ones (13%), even if the vast majority of the owners did not report this behavior at all (n = 265, 70% of the respondents). VA horses were also quite likely to rear or buck: 61% of the owners answered that their animals have "sometimes" shown these behaviors and 12% that they have "always" behaved in this way. A great proportion of the participants (55%) did not observe the occurrence of weaving behavior, but, respectively, 46 (25%) and 87 (45%) SA and VA horses' owners reported their horses having "sometimes" shown this symptom or other stereotypic behaviors. Even trembling and vocalization were reported as more usual in VA horses than in SA ones. Many of these behaviors, such as fence walking, weaving and other stereotypic behaviors, are reported in the list drawn up by Young and others [41] to identify a horse's stress level. The matching between the behaviors listed by Young and those reported by the questionnaire's respondents may indicate that fireworks cause medium to high levels of distress in horses and therefore they should be addressed as a cause of welfare issues.

Most of the owners did not know when the anxious reaction to noisy events had appeared for the first time (SA 48%; VA 35%). Regardless, when the first unusual behavior had been observed by the owners, the majority of them reported that to have happened in a range between 4 and 9 years old (SA 23%; VA 31%). Only 10 horses in each cluster (SA 6%, VA 5%) had shown their first anxious response before turning 1 year old. When the frequency of anxiety behavior is considered (Figure 1) in both groups, approximately half of the respondents reported their horses to have anxious episodes less than once a month (SA 57%; VA 50%). Nevertheless, in the VA cluster 35 (18%) horses showed signs of noise reactivity one a month and 61 (31%) even once a week. The vast majority of the SA horses' owners noticed that this behavior improved with time (54%) or did not change (42%). VA horses tended either not to change in their reactivity (49%) or to improve with time (36%), while others got worse (15%). Even in the Nordic answers, there were indications that the more anxious horses got worse with age [46]. Fireworks are intermittent and high-intensity noisy events and therefore totally unpredictable for a horse, making the habituation process hardly possible. Thus, particularly very anxious subjects might have no improvements or even get worse with age, which has already been proven to be common in dogs [36–38].

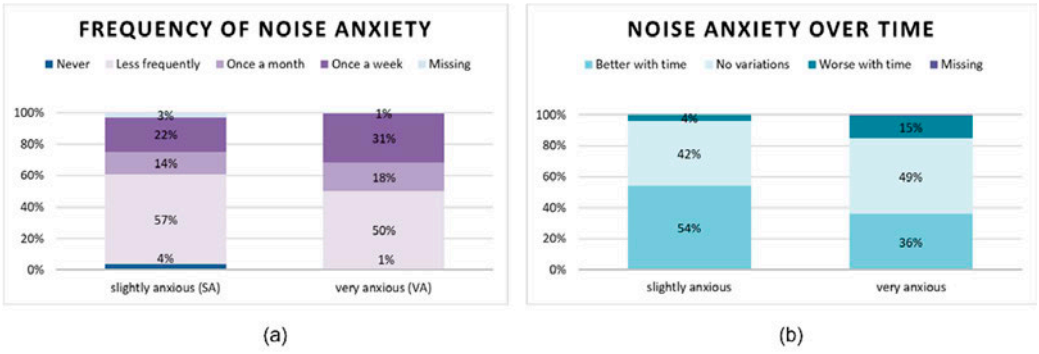


Figure 1. Graphs showing for each cluster: (**a**) the frequency of noise anxiety and (**b**) evolution of noise anxiety over time.

The majority of respondents reported their horses limit anxious behaviors to the duration of the noisy event (SA 80%; VA 49%). In some cases, especially with very anxious subjects, anxious behaviors lasted up to 2 h after the noisy event ended (35%) or even until the next day or longer (14%). In the Nordic questionnaire, owners that reported anxious signs lasting longer than the end of the fireworks had around four times higher risk of owning a horse with severe noise anxiety [46]. Literature reports similar findings in dogs, whose signs may last even for a few weeks [39].

Based on this survey, VA horses are more likely to injure themselves during noisy events (26%) than SA ones (5%). Gronqvist and colleagues' survey yielded an even larger proportion (a quarter) of participants reporting injuries associated with fireworks, and

multiple different types of injuries were described from minor cuts and sprains to broken limbs [33]. Therefore, noise anxiety in horses can be considered as a significant welfare issue, both due to the unnecessary fear and distress it causes to the animal, and due to its physical consequences, namely wounds and injuries. Another thing worth mentioning is the risk of potentially dangerous accidents for the rider/handler [13,14,29].

3.3. Most Alarming Behaviors

Owners' opinions on the most alarming behaviors are presented in Figure 2. A greater proportion of participants in both clusters stated to be worried about behaviors that lead to "excessive activity", such as running (SA 40%, VA 48%), fence/box-stall walking (SA 40%, VA 36%) and bucking/rearing (SA 27%, VA 33%). Additionally, sweating and trembling were regarded as alarming behaviors in both clusters. VA horses' owners reported breaking fences and gastrointestinal symptoms as most alarming behaviors more often than SA horses' ones. When asked to rate how anxious their horses were in these circumstances, only 12 owners (SA = 11, 6%; VA = 1, 1%) described them as "not anxious at all".

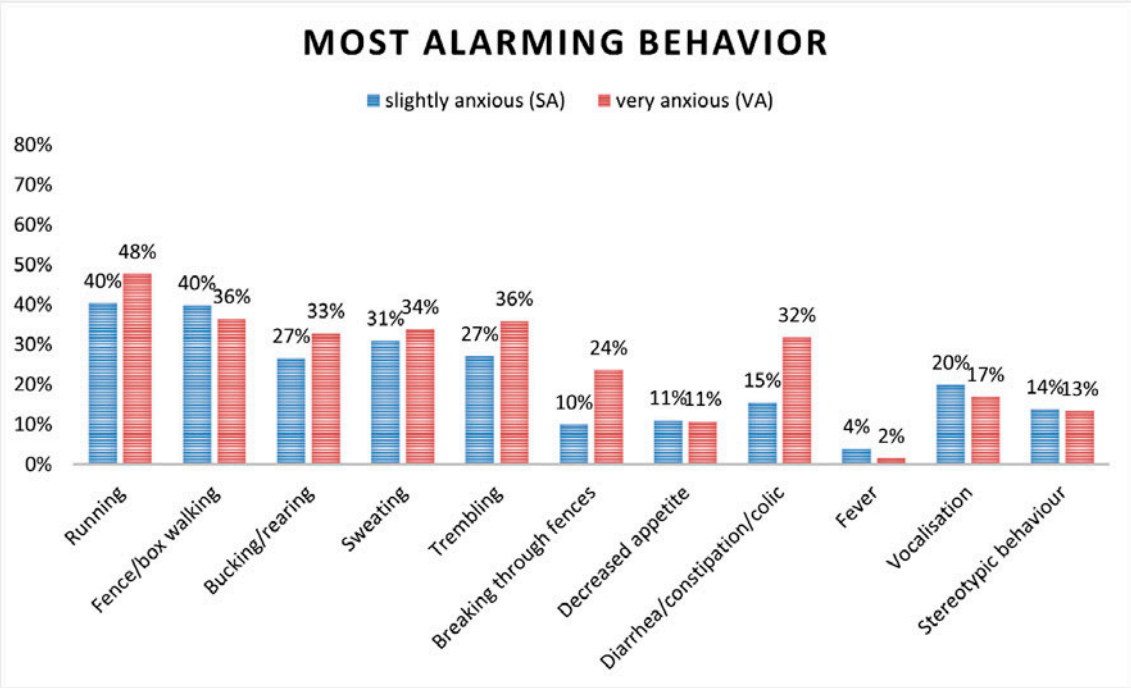


Figure 2. Graph showing, for each cluster, the reported percentages of most alarming behaviors perceived by horse owners.

3.4. Horse Management during Noisy Events

The participants were asked to describe how they used to deal with their horses' noise reactivity and how effective the different management approaches had been. The vast majority of the strategies that had been used by the owners were reported to be more effective in the slightly anxious subjects than in the very anxious cluster. A greater proportion of the participants reported that, during fireworks, they had provided hay throughout the night, turned in/turned out their horse or moved it to a paddock away from the event. The last two were also reported to be the most popular strategies by Gronqvist and colleagues [33], possibly because they are easier management solutions than looking for areas off the properties or asking veterinarians for prescription medicines. Moreover, Lindstedt [63] showed quite similar results: keeping the horse in the stable, playing music/radio and providing hay throughout the night were reported to be the most used management techniques by Finnish and Swedish owners. Regardless, in the same study, none of these protocols were considered effective by all the owners.

Different perceived efficacy levels of the three main management techniques are shown in Figure 3. Providing hay during nighttime proved to be quite effective in the SA group; conversely, most of the VA horses did not show any improvement. Moving the horse to a paddock or turning it in/out tended to be assessed as "somewhat effective" in both clusters; however, VA horse owners reported moving the horse to a paddock as "not effective" more frequently than SA horse owners. Similarly, owners in the SA group reported turning the horse in/out to be "very effective" more frequently than the VA group, while VA perceived this procedure as "not effective" more frequently ($p = 0.002$). Only few respondents answered that they had sedated the horse (using prescription medicines), used over-the-counter products, used ear plugs/covers, moved it off the property, covered

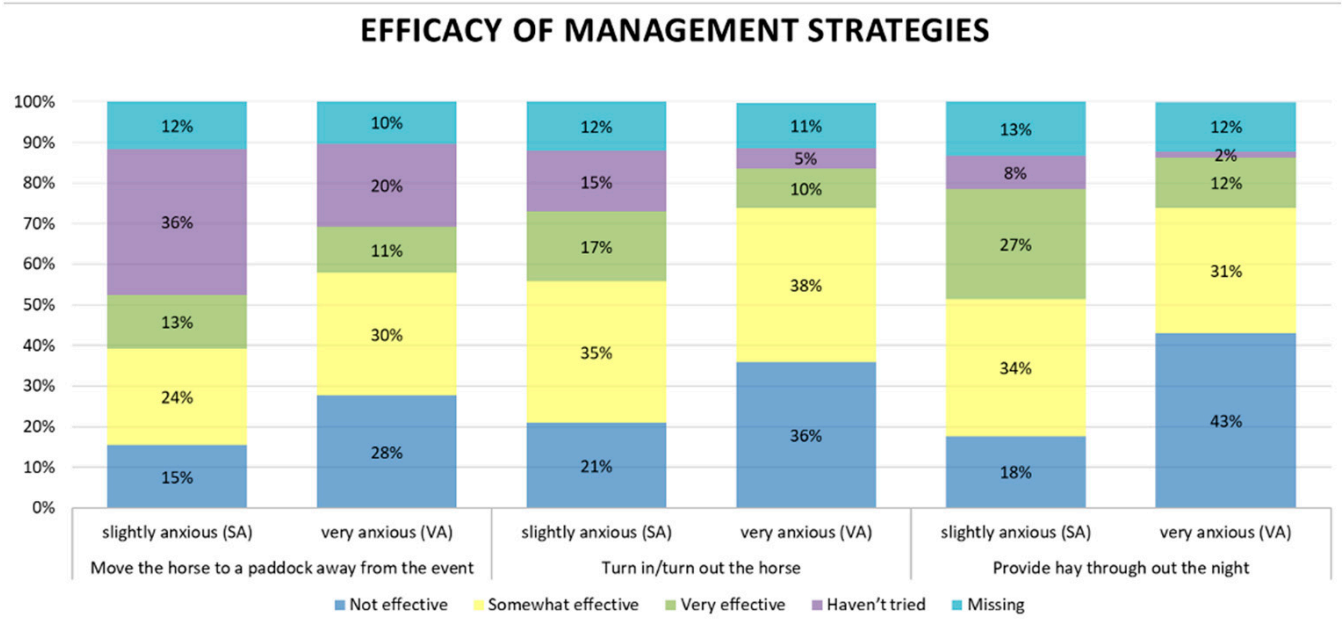


Figure 3. Graph reporting the perceived efficacy of different management strategies by horse owners of the two clusters.

When asked about future management strategies there were no differences between the owners of horses belonging to the different clusters. Most of the participants planned to provide hay throughout the night (SA 52%; VA 47%), turn in/turn out the horse (SA 38%; VA 45%) and play music or radio in the stable (SA 22%; VA 30%). Only five (3%) SA horses' owners would use sedation, while a few more (7%) VA horses' owners planned to sedate their horse during the upcoming noisy events.

The survey ended with a specific question on owners' interest in using new medicinal products for controlling noise anxiety. Most VA horses' owners stated to be quite interested, 23% and 39% of them answered "yes" or "likely yes", respectively. While SA horses' owners were less inclined to adopt this kind of management strategy, only 8% of them answered "yes", and 28% "likely yes". Paste and powder/granules were the preferred medication form (SA 85%; VA = 71%). Only 14% of SA horses' owners and 29% of VA ones chose oral liquid/solution, oromucosal gel or tablets. Similar results were yielded from Swedish and Finnish horse owners: the ones who reported severe noise anxiety in their horse also expressed their potential interest in the use of prescription drugs [63]. Dangerous and risky behaviors, longer duration and difficult management made VA horses' owners concerned about noise anxiety. As reported, these horses are more likely to injure themselves and literature reports a close link between anxious behaviors and physiological signs of distress [2–9]. Therefore, noise anxiety can be considered a health issue, both because the risk of wounds and cuts and because of the stressful condition that may lead to severe systemic disease. Consequently, it is crucial that the owners consult their

veterinarian to find the best management strategy, including medicinal products when necessary. Pharmacological treatment options are available for dogs with noise anxiety. Dexmedetomidine [50] and imepitoin [64] have an anxiolytic effect, especially with noise-related anxiety. However, there are no registered medicines for noise anxiety in horses, thus all drugs are used off-label.

A recent study [34] investigated the use of detomidine (Domosedan vet 7.6 mg/mL oromucosal gel—Orion Corporation, Espoo, Finland) in acute anxiety episodes in horses. The results suggested that detomidine could be effective in alleviating acute fear and anxiety triggered by firework-related noise, and no significant adverse effects were observed. However, this was a pilot study with some limitations (small sample size, possible uneven fireworks intensity and a horse selection based mainly on owners' reports), thus further research is still needed.

3.5. Logistic Regression

A binomial logistic regression was performed to ascertain the effects of the independent variables (e.g., breed and sex of the horse, location of the stable, noise anxiety frequency, duration and changes over time, age horse start showing noise anxiety signs, most alarming behaviors considered by the owner, injuries and effectiveness of the tree most used management techniques) on the likelihood to be part of the VA group. The model included the independent variables listed above except country and experience of the respondent (which were only included in the study for descriptive purposes), and horse characteristics such as age at the moment of the questionnaire and main purpose (on which the authors found no published data about how they are commonly associated with noise reactivity in this species). The model was statistically significant, χ^2 (39) = 152.150, $p < 0.001$, explaining 51.4% (Nagelkerke R2) of the variance in the anxiety level and correctly classified 81.5% of cases. Table 2 summarizes the results of logistic regression. Horses that have reported injuries during noise events (OR = 0.24, 95% CI: 0.08–0.76) were more likely to be clustered as VA. Horse owners who reported to be mostly alarmed by behaviors such as breaking through fences (OR = 0.17, 95% CI: 0.06–0.48), bucking/rearing (OR = 0.39, 95% CI: 0.18–0.87), gastrointestinal signs (OR = 0.23, 95% CI: 0.10–0.56), running (OR = 0.39, 95% CI: 0.18–0.83) or weaving (OR = 0.34, 95% CI: 0.12–0.92) were more likely to have a horse in the VA cluster. Gronqvist and colleagues [33] highlighted a possible association between certain alarming behaviors, such as breaking through fences, and an increase risk of injuries and lacerations. This may explain the higher concern of the VA horses' owners for all these "intensive activity" related behaviors: breaking through fences, bucking/rearing and running. In addition, horses, as a species, are highly susceptible to suffering anxiety-related problems [65], but, as mentioned by Stuijfzand and colleagues [66], also humans with higher anxiety levels tend to show hyperreactivity even to moderate or ambiguous threatening stimuli. Consequently, these hyperreactive subjects are more prone to manifest not only behavioral alterations but also physiological changes due to the chronic stress response [67]. Anxiety activates hormonal and neuronal pathways causing changes such as fluctuations in epinephrine and cortisol levels; as a consequence the heart rate increases and the blood flow is altered, leading to a reduction in gastrointestinal activity among others [68,69]. VA horses' owners may be particularly worried about gastrointestinal signs because in their animals these physiological changes turn into pathologies, such as diarrhea or even colic, more frequently than in less anxious subjects. Furthermore, this hyperreactivity status decreases the level of well-being of the horse, its ability to cope environmental changes while increasing negative emotional states [65]. Thereby, these high levels of frustration may justify the development of stereotypic behaviors such as weaving. Provide hay throughout the night (OR = 0.41, 95% CI: 0.16–1.01) were more likely to be very effective management strategy in SA horses compared to VA. Therefore, distraction techniques, as already reported for playing shooting music [70,71], may be useful only for horses with mild anxiety levels. No differences were found in characteristics such as sex, breed and location of the stable. Similarly, in the questionnaire conducted by Lindstedt, the

severity of anxiety in different stable locations did not differ significantly [63]. Instead, our results differ from what found in pets: while there is evidence that breed, genetics, age and environment affect the prevalence of noise anxiety in dogs [26,36–38,40], in our study only sex came out to be a significant factor, geldings being classified more frequently as "very anxious" compared to mares.

Table 2. Summary of binary logistic regression analysis. Odds ratios for the association between various independent variables and cluster horse anxiety level (slightly anxious vs. very anxious). Numbers in bold distinguish the different variables and the statistically significant results.

Category	β	OR	OR 95% CI		Sign.
Sex (ref: Mare)					
Gelding	0.398	1.49	0.77	2.86	0.23
Breed (ref: Hotblood)					
Coldblood	−0.637	0.53	0.22	1.30	0.17
Warmblood	−0.777	0.46	0.20	1.04	0.06
Definine the location of the stable (ref: Urban)					
Rural (surrounded by farms)	0.942	2.57	0.53	12.46	0.24
Rural village on a main road	−20.101	0.00	0.00		1.00
Semi-rural (adjacent to an urban area)	0.847	2.33	0.46	11.96	0.31
How long does anxious behavior usually last? (ref: Until the next day or longer)					
The duration of the noisy event	−2.281	0.10	0.01	1.22	0.07
Up to 2 h after the noisy event ended	−1.141	0.32	0.08	1.31	0.11
I don't know	0.346	1.41	0.32	6.27	0.65
At what age did your horse start showing these signs? (ref: <1 year of age)					
1–3 years	0.342	1.41	0.28	7.02	0.68
4–9 years	0.742	2.10	0.47	9.41	0.33
≥10 years	−0.005	1.00	0.17	5.70	1.00
Don't know	0.202	1.22	0.29	5.15	0.78
Has your horse's noise reactivity changed over time? (ref: Worse with time)					
Better with time	−1.198	0.30	0.09	1.05	0.06
No, it's the same	−0.259	0.77	0.23	2.64	0.68
How often does your horse show signs of noise reactivity? (ref: Once a week)					
Once a month	−0.203	0.82	0.38	1.76	0.61
Less frequently	1.501	4.49	0.22	93.15	0.33
Never	0.115	1.12	0.42	2.99	0.82
Has the horse injured itself as a result of the reactions caused by the noisy event? (ref: yes)					
No	−1.406	0.25	0.08	0.75	**0.01**
In your opinion, which are your horse's three most alarming behaviors related to noise reactivity? (ref: Yes)					
Fence/box/stall walking (No)	−0.224	0.80	0.38	1.70	0.56
Breaking through fences (No)	−1.747	0.17	0.06	0.48	**0.00**

Table 2. *Cont.*

Category	β	OR	OR 95% CI		Sign.
Bucking/rearing (No)	−0.934	0.39	0.18	0.87	**0.02**
Decreased appetite (No)	−0.078	0.93	0.32	2.71	0.89
Diarrhea/constipation/colic (No)	−1.459	0.23	0.10	0.56	**0.00**
Fever (No)	1.013	2.75	0.34	22.08	0.34
Running (No)	−0.947	0.39	0.18	0.83	**0.02**
Sweating (No)	−0.684	0.51	0.23	1.10	0.08
Trembling (No)	−0.779	0.46	0.21	1.00	0.05
Vocalisation (No)	−0.386	0.68	0.27	1.70	0.41
Weaving or other stereotypic behaviour (No)	−1.093	0.34	0.12	0.92	**0.03**
How effective "move the horse to a paddock away from the event" had been? (ref: Not effective)					0.53
Haven't tried	−0.342	0.71	0.29	1.75	0.46
Somewhat effective	0.064	1.07	0.45	2.52	0.89
Very effective	0.373	1.45	0.49	4.34	0.50
How effective "turn in /turn out the horse" had been? (ref: Not effective)					0.14
Haven't tried	−1.321	0.27	0.08	0.86	**0.03**
Somewhat effective	−0.134	0.87	0.42	1.84	0.72
Very effective	−0.44	0.64	0.23	1.79	0.40
How effective "provide hay through out the night" had been? (ref: Not effective)					0.07
Haven't tried	−1.972	0.14	0.02	0.82	**0.03**
Somewhat effective	−0.339	0.71	0.34	1.48	0.36
Very effective	−0.904	0.41	0.16	1.01	**0.05**

4. Conclusions

An online survey was used to investigate UK and US owners' perception of noise anxiety severity in their horses, the management strategies adopted to reduce anxiety behaviors and their perceived efficacy. The results showed that severe noise anxiety is reported to cause serious welfare consequences, impacting both physiology (e.g., gastrointestinal signs, sweating) and behavior (e.g., running, breaking fence) of the horse. Very anxious horses showed signs of noise reactivity frequently and their reaction did not improve with time (they do not habituate to these stimuli). The most used management strategies consisted of providing hay throughout the night, turning in/out their horse or moving it to a paddock far away; however, most of these techniques were reported to be effective only in the slightly anxious subjects, not in the very anxious ones. Our results confirmed that noise anxiety is a behavioral problem that can lead to important welfare consequences for horses. UK and US owners are quite concerned regarding this issue, particularly the ones whose horses have severe noise anxiety-related problems. New management strategies, including the use of medicinal products, should be considered to reduce behavioral and physiological signs and help horses to cope with noisy events. Since some differences were found in the answers from owners of different countries in terms of noise anxiety's magnitude and spread, further research is still needed to better understand this behavioral problem.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/ani12101319/s1, Table S1: Survey questions, Table S2: Owners and Horse populations main characteristics.

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Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author E.D.C.

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Appendix 4 - Veterinary Evidence BESS Safety Assessment for Lime Down BESS

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 Rossdales 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 Rossdales 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 Gilltown 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 Pleanala. 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 uniocular 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

Lime Down Solar Farm and BESS Planning Inquiry | Veterinary and Safety Evidence Report | April 2026

Appendix 5 - Lime Down vet report by Chris Shepherd (BVSc MRCVS)

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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.



Chris Shepherd BVSc MRCVS

Appendix 6 - Lime Down vet report by George Gemmell (DVM, MRCVs)

Potential Effects of the Proposed Lime Down Solar Project on Local Equine Populations.

The proposed Lime Down Solar Park spans 3,056 acres across rural Wiltshire and Gloucestershire. Construction is due to begin in 2027 and is expected to last for at least two years. During peak construction estimates expect 52 HGV deliveries per day plus commuter traffic which will be funneled through the area via narrow roads often used by local equestrians, including leisure riders, professional yards, and breeding operations. The abrupt shift away from a quiet agricultural landscape poses credible risks to equine welfare, rider safety, and daily horse management, as evidenced by nearly 5,000 public objections highlighting equine concerns.

Equine Behaviour and Sensitivity

Equids have evolved as prey animals and exhibit startle responses to sudden noise, movement, vibration, visual changes, and unfamiliar odours. These responses can trigger flight, elevated heart rates, and stress. Studies show that intermittent, loud stimuli such as reversing alarms, HGV engine noise, and machinery noise are likely to provoke stronger reactions than steady noise, with vibration also eliciting responses [Christensen et al. (2008); Visser et al. (2002); von Lewinski et al. (2013); Snoeks et al. (2015)]. British Horse Society (BHS) guidance advises halting construction within 20-50 metres of horses.

Traffic and Road Safety

The narrow rural roads in the area are routinely used by ridden horses, horseboxes, and horsedrawn vehicles. During the construction of Lime Down increased HGV traffic, combined with poor sightlines and limited passing spaces amplifies the risks to these road users. Sudden encounters with loud and unfamiliar machinery can cause flight reactions such as bolting, leading to collisions, or injuries. It had been shown that repeated exposure does not reliably habituate horses to stimuli, therefore it is unrealistic to expect horses to become used to the disturbances Lime Down will bring. Wiltshire Council has flagged the equestrian impacts and risks increased road traffic will bring and this aligns with BHS data that states close/fast vehicles cause 81% of equine incidents on roads.

Noise, Vibration, Visual, and Construction Disturbance

Construction introduces intermittent noises (machinery, alarms, hammering), vibration (piling, compaction), lighting, and movement, plus operational glare from solar panels along with inverter hum within equine hearing range (55Hz-33kHz). These provoke startle responses and lead to increased vigilance, and stress. This is likely to be worsened by BESS odours or fumes. BHS and other assessments state that construction near to equestrian sites should use low-vibration equipment and operate with timing restrictions to reduce stress on local equestrian populations.

Drainage, Ground Conditions, and Footing

The project includes areas located within Flood Zones 2 and 3 and proposes the introduction of drainage and runoff systems. This, along with soil compaction, track installation, and ditch modification may alter local hydrology. For equine management, even small changes in drainage can have huge effects not limited to:

Increased mud in gateways and high-traffic areas.

Reduced stability of tracks and access routes.

Higher risk of slipping and soft tissue injury.

Increased incidence of hoof-related conditions (e.g. abscessation, softening).

Greater prevalence of dermatological conditions such as mud fever.

These impacts not only affect the welfare of equids but also the safe handling and movement of horses, particularly for more vulnerable groups such as foals and older animals. [O'Grady & Poupard (2003); Scott & Miller (2011)].

Access, Rights of Way, and Route Fragmentation

A great proportion of current equestrian use relies on the connected networks of bridleways, byways, and quiet roads. While the developer proposes to maintain rights of way where possible, temporary diversions are anticipated.

Diversions may be unsuitable for equestrian use if they:

Increase exposure to traffic.

Reduce road/bridleway width.

Introduce poor/unfamiliar surfaces.

Pass close to construction activity.

Loss of safe circular hacking routes can:

Reduce opportunities for exercise and training.

Increase reliance on roadwork in less suitable areas.

Negatively impact equine fitness and behaviour.

For the local breeding operations the disruption of access routes could complicate the safe movement of mares and foals between grazing areas.

Dust, Air Quality, and Site Activity

Construction activity is likely to generate dust and airborne particulates, particularly during dry periods. The potential impacts of this include:

Irritation of the respiratory tract.

Contamination of forage and water sources.

Exacerbation of pre-existing respiratory conditions.

These risks are most relevant for:

Stabled horses near access routes.

Horses with known airway sensitivity.

Brood mares and youngstock in enclosed environments.

BESS Risks.

Professor Celia Marr FRCVS, RCVS/European Specialist in Equine Internal Medicine, assessed the 212MW Dunnstown BESS proposal (2021) and warned of

acute risks to nearby horses from lithium-ion fires releasing toxic gases such as hydrogen fluoride, hydrogen cyanide, and phosphoryl fluoride—lethal via inhalation/skin contact. The increased lung surface found in horses increases vulnerability to airway damage, inflammatory disease, asthma, and acute respiratory distress syndrome, even from low particulates.

Biosecurity and Human Factors

Increased vehicle movements and workforce presence introduce additional risks:

Potential transfer of pathogens between sites via vehicles or equipment.

Increased likelihood of gates being left open or boundaries compromised.

Unfamiliar personnel interacting with or moving near horses.

The presence of dogs or other disturbances associated with site activity.

These factors collectively increase the probability of management-related incidents.

Implications for Brood Mares and Youngstock

Brood mares represent a particularly sensitive subgroup due to the physiological and behavioural demands of pregnancy, foaling, and early lactation. Disturbance during this period may result in:

Heightened stress responses.

Increased risk of injury during flight reactions.

Disruption to grazing.

Hypervigilance leading to a decrease in resting behaviour.

Increased handling risks when moving mares and foals.

Given the evidence linking stress responses to environmental stimuli in horses , maintaining a calm and predictable environment is especially important during late gestation and the periparturient period.

Emergency Access and Veterinary Care

Changes to road access, traffic congestion, or temporary closures may delay:

Veterinary attendance in emergencies (e.g. colic, dystocia, foaling difficulties).

routine management activities

In time-critical conditions, even short delays can have significant welfare consequences.

Overall Assessment

The primary risks to equine populations associated with the Lime Down Solar Project are:

Increased HGV and construction traffic on unsuitable rural roads.

Unpredictable noise and visual disturbances.

Disruption to established equestrian routes.

Changes to drainage and ground conditions.

Indirect risks associated with increased human activity.

These risks are not even, but are likely to be significant for equestrian establishments located near construction routes, access points, or active work areas. Given the behavioural characteristics of horses and the sudden changes that would occur within the local landscape, these impacts should be considered carefully before construction begins. The Lime Down Solar Project would bring substantial and prolonged alterations to a rural environment that currently supports a significant equine presence. Based on established knowledge of equine behaviour and welfare, the proposed development presents credible, evidence-supported risks to both horse and rider/handler safety.

Appendix 7 - Lime Down vet report by Dr. Annemarie Farrington

Veterinary Report (Lime Down)

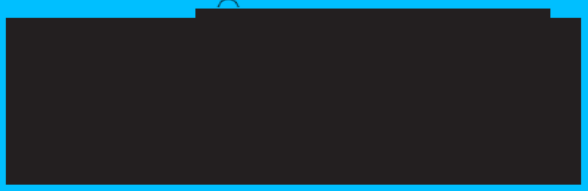
The proposed large-scale solar development adjacent to equine grazing presents a material risk of clinically significant respiratory compromise in horses bred and managed for elite Thoroughbred performance. Construction activity will generate respirable airborne particulate matter, including dust and crystalline silica arising from soil disturbance, excavation, and heavy vehicular movement. In high-value equine populations, even subclinical lower airway inflammation is clinically relevant, with well-established effects on performance and future racing potential.

Peer-reviewed evidence demonstrates that inhalation of respirable dust induces neutrophilic airway inflammation, mucus accumulation, and reduced pulmonary function, with severity closely associated with exposure levels (Couëtil et al., 2016; Ivester et al., 2014). Importantly, even short-term exposure in susceptible horses may result in persistent airway inflammation, airway sensitisation, and sustained impairment of respiratory function, with potential for long-term or irreversible effects on athletic capacity. Given the horse's high minute ventilation, particularly during exercise, inhaled particulate dose is substantially amplified compared to humans.

From a reproductive perspective, pregnant mares represent a particularly sensitive cohort. Maternal respiratory compromise and systemic inflammation associated with inhalation of respirable dust may adversely affect oxygen delivery and physiological stability during gestation. In late pregnancy, where fetal growth and oxygen demand are maximal, even mild reductions in pulmonary function or chronic low-grade inflammation may have implications for fetal development and neonatal viability. Additionally, environmental stressors may influence endocrine responses in pregnant mares, with potential downstream effects on foal health and early development. While such effects may be subclinical, they are of clear relevance in high-value breeding populations where optimal maternal and foal outcomes are critical.

The potential for avian mortality associated with large-scale solar installations also raises secondary biosecurity considerations in equine environments. The presence of bird carcasses within grazing land may pose a risk to horses through contamination of pasture with pathogenic organisms, including Clostridium botulinum, which is recognised as a cause of botulism in horses following ingestion of contaminated forage or carrion material. Horses are highly susceptible to botulinum toxin, and even low-level exposure can result in severe and potentially fatal neuromuscular disease. From a veterinary perspective, the introduction of carcass material into grazing systems therefore represents an additional, avoidable risk to equine health.

Sustained exposure to construction-related particulate matter, together with potential biosecurity risks arising from carcass contamination of grazing land—particularly in downwind paddocks and training environments—represents a predictable and avoidable risk to equine respiratory health, reproductive outcomes, performance, and breeding value. Such impacts, even where subtle, are of clear clinical relevance and carry

Signed: _ 

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Date: 28 April 2026

Appendix 8 - Morgan and Morecambe – Managing equestrian noise at Equestrian Receptors Technical Note – 22 October 2025

MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Managing Construction Noise at Equestrian Receptors Technical Note



Deadline: 6
22 October 2025
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Prepared by:

RPS

Prepared for:

Morgan Offshore Wind Limited,
Morecambe Offshore Windfarm Ltd

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Glossary

Term	Meaning
Decibel	A unit used to measure or compare the intensity of a sound by comparing it with a given reference level on a logarithmic scale
Noise	An unwanted or unexpected sound.
Onshore Order Limits	Onshore Order Limits See Transmission Assets Order Limits: Onshore (below).
Sound	Fluctuations of pressure within a medium (gas, solid or fluid) within the audible range of loudness and frequences with excite the sensation of hearing.
Transmission Assets	The area within which all components of the Transmission Assets will be located, including areas required on a temporary basis during construction and/or decommissioning.
Transmission Assets Order Limits	The area within which all components of the Transmission Assets landward of Mean High-Water Springs will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds). Also referred to in this report as the Onshore Order Limits, for ease of reading.

Acronyms

Acronym	Meaning
BHS	British Horse Society
ES	Environmental Statement
NSR	Noise Sensitive Receptor

1 Managing Construction Noise at Equestrian Receptors Technical Note

1.1 Introduction

1.1.1.1 The Examining Authority's Second Round of Questions issued on 8th September 2025 (PD-011) requested that the Applicants provide further information of how the impacts of construction noise on wildlife, livestock (cattle and sheep) and horses have been assessed and what specific measures are going to be implemented to mitigate the impact on animals during construction (Q2.14.1.5).

1.1.1.2 Livestock were not identified as receptors sensitive to construction noise and vibration at the pre-application or scoping stage and therefore impacts on these were not assessed or reported in the ES. The Applicants refer to their response to REP3-101.8 (REP4-094), which includes reference to available research on noise and livestock, how this relates to construction noise levels limits proposed for the Transmission Assets and the range of mitigation measures which may be considered to reduce noise impacts on both livestock and horses.

1.1.1.3 In its response (REP5-130), the Applicants confirmed that construction noise impacts had been assessed at both Wrea Green Equitation Centre and Quaker Wood Stables, and these are reported in APP-117. However, the Applicants also noted that, further to this assessment and issues raised with regard to potential impacts on horses and protected characteristics of users of the equestrian facilities in submissions to the Examination, it had commenced a study to identify the risk of noise impacts on equestrian receptors which will be used to inform specific noise mitigation at these receptors during construction. The Applicants committed to submit the outcome of the study at Deadline 6.

1.1.1.4 This technical note provides the findings of this study which includes a review of equestrian receptors at the businesses for which concerns have been raised. The technical note also sets out the scope of specific mitigation measures which should be considered at these receptors to minimise noise impacts on equestrian receptors during the construction phase.

1.1.1.5 Although the focus of this technical note is on construction noise, the Applicants have also given consideration to the impact of construction vibration on equestrian receptors, setting out further measures which can be applied to minimise these impacts.

1.2 Review of research, guidance and assessment approaches

1.2.1.1 As noted in paragraph 8.11.4.10 of Volume 3, Chapter 8: Noise and Vibration (APP-117), the Applicants acknowledge that horses can be startled and flee from noises, with reference to guidance published by the British Horse Society (BHS, 2025). This guidance was used to inform the assessment of impacts on Wrea Green Equitation Centre and Quaker Wood Stables, the latter which were identified as locations where horse riding would be undertaken during the daytime as a recreational activity.

1.2.1.2 However, in response to the issues which have been raised during Examination, the Applicants have undertaken a wider review of available research and guidance relating to noise impacts on horses, with a particular focus on construction noise, as well as reviewing assessment approaches undertaken to support other Development Consent Orders and major infrastructure schemes.

Research review

1.2.1.3 The Applicants have identified no research studies specific to the response of horses to construction noise. However, when reviewing wider research undertaken on horses' reaction to different sounds, the Applicants have found that several research studies concur with the British Horse Society (BHS) guidance, in that noise can lead to behavioural responses in horses (Christense et al., 2005), particularly where the noise is novel and unfamiliar (Janicka et al., 2022). Research also indicates that different horses, like humans, have different sensitivities to noise and therefore, when considering mitigating the impact of construction noise on equestrian receptors, a receptor specific approach is required.

1.2.1.4 When considering the risk of construction noise impact on equestrian receptors from individual construction activities and how this should be mitigated, understanding the hearing range of horses is an important factor. Research has identified that a horse's hearing can range from 55 Hz to 33.3 kHz, with a region of best sensitivity from 1kHz to 16 kHz (Heffner and Heffner, 1983). In comparison, the frequency range audible to humans is typically from 20 Hz to 20 kHz.

Guidance review

1.2.1.5 In addition to the guidance used to inform the assessment of equestrian receptors reported in APP-117, the Applicants have identified further guidance published by British Horse Society relevant to the impact of noise on horses from construction activities. In its specific guidance relating to construction (BHS, 2024), the British Horse Society reiterate that it is a horse's instinct to run from threat, with *'sudden noise and movement'* being likely triggers to a horse's reaction. In construction terms, it relates this to sudden movement or noises from machinery being more of a threat to those which are still.

1.2.1.6 The guidance also provides specific advice on how such reactions from horses can be managed by contractors, based on the following distances from construction activities:

- 20 metres:

  Machinery or activity should not resume until horses are at least twenty metres past. If it is not possible for activity to be halted, staff should be at the location to warn approaching equestrians as appropriate. Such 'sentries' should be obvious on approach, not hidden behind a tree or equipment as suddenly appearing could be an additional stress factor causing a horse to react.

- 50 metres:

If a horse appears distressed—freezes, jerks sideways, prances about, takes flight, spins round or shies away or acts in any way other than a calm forward motion—or an equestrian appears to be struggling for control, or shouts, all movement and noise should cease immediately to avoid escalating the situation. Activity should not resume unless the equestrian indicates that it is safe to do so or is out of sight or more than fifty metres away.

Approaches taken to assessing impacts in EIA

Approach taken in assessment reported in APP-117

1.2.1.7 In its assessment reported in APP-117, the Applicants identified noise sensitive receptors in accordance with the criteria set in Table 8.15, the latter defining their sensitivity according to different settings where human receptors may be present. The assessment methodology and receptor sensitivity are matters which have been agreed with Fylde Borough Council (AS-089, FBC.NV.8) and South Ribble Borough Council (REP4-080, SRBC.NV.8).

1.2.1.8 Both Wrea Green Equitation Centre and Quaker Wood Stables were identified as commercial receptors in accordance with guidance in Table 8.15, with a corresponding sensitivity to noise identified as 'low'. However, following further consideration of the particular sensitivity of horses to sound, noting that any noises may be considered as a potential threat from which horses flee, the sensitivity of those using these locations for horse riding as a recreational activity receptor was increased to medium.

1.2.1.9 However, the Applicants acknowledge that protected characteristic individuals using the equestrian receptors may, like horses, react differently to sound, including sudden and unfamiliar sounds arising from construction. Therefore, the Applicants' focus during the post-consent phase will be to further understand these specific receptors, including their users, and identify what receptor specific mitigation is appropriate to minimise impacts. This approach is further discussed in **paragraph 1.3.1.13** below.

1.2.1.10 The Applicants acknowledge that Midgeland Riding School is also a commercial receptor in accordance with the criteria set in Table 8.15. However, the building associated with the riding school is approximately 650m from the Order Limits and therefore lies outside the construction noise assessment study area of 300m from the Order Limits. Therefore, construction noise impacts at this receptor were not reported in APP-117.

Other DCOs and other major infrastructure projects

1.2.1.11 In its review, the Applicants have not identified any other EIA assessments submitted to support DCOs or other major infrastructure projects in which the noise impacts on horses have been considered in the original application documents. The Applicants have identified that the consideration of noise impacts on horses to invariably be in response to matters raised during examination of the developer's applications, the most notable of these being 'High Speed 2 Limited Phase One Noise effects on Livestock' (Arup, 2017) study.

1.2.1.12 This study focussed on the effects resulting from transportation noise effects during the operational phase of High Speed 2 (HS2), noting the following in relation to managing construction noise impacts on livestock, including horses:

'A number of protective measures are identified in the HS2 Phase One Environment Statement to control construction noise and vibration, including the requirement that best practicable means (BPM) will be applied during construction works to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors. Additional site-specific mitigation may be also identified in the local environmental management plans.'

1.2.1.13 Although the HS2 Phase One study referred to the application of BPM to minimise construction noise at properties and other sensitive receptors, it acknowledged that site specific mitigation may also be identified to minimise impacts on livestock receptors and such measures to be included in management plans.

Construction vibration

1.2.1.14 The focus of this study is on construction noise, however, the Applicants acknowledge that there is the potential for horses to react to vibration resulting from the construction of the Transmission Assets. Although the Applicants have not identified any specific research studies on this issue, the Institute for Environmental Research and Education (IERE, 2025) suggest that evidence is emerging which indicates horses can:

- Detect subtle seismic activity, such as small earthquakes.
- Respond to vibrations caused by approaching vehicles or machinery.
- Differentiate between different types of vibrations.

1.2.1.15 Therefore, the Applicants have also considered how vibration from construction sources can be managed so that the reaction of horses to it, and the consequential impact on equestrian receptors, can be minimised.

1.3 Outline approach to mitigating construction noise and vibration impacts at equestrian receptors

1.3.1.1 The study has confirmed that equestrian receptors are at risk of impacts due to sudden noises and vibration generated by the construction of the Transmission Assets.

1.3.1.2 The Applicants recognise the need to consider how horses will react to the construction works in close proximity to these receptors and identify what mitigation measures will need to be applied to minimise the risk of adverse noise and vibration impacts at them.

1.3.1.3 However, the Applicants also recognise that the approach to mitigation will need to be developed on a receptor specific basis, as this will vary depending on the specific construction activities (construction plant, timing, duration), the location and use of each equestrian receptor, and the sensitivities of the particular horses. Therefore, engagement with these receptors throughout the post-consent and construction phases will be key to identifying measures

which will be most effective at reducing the risk of adverse noise and vibration impacts at the time the works are undertaken.

1.3.1.4 The scope of mitigation measures and engagement to be considered by the Applicants, including reference to existing project commitments, are set out in further detail below.

Scope of mitigation measures

1.3.1.5 In its update to the Outline Construction Noise and Vibration Management Plan (oCNVMP) at Deadline 5 (REP5-054), the Applicants committed to give specific consideration to the control of noise at the following equestrian receptors, including the need for any receptor specific measures:

- Wrea Green Equitation Centre
- Quaker Wood Stables
- Midgeland Riding School

1.3.1.6 The oCNVMP sets out a number of measures which will be considered to minimise construction noise throughout the construction period. These include the use of plant fitted with measures to reduce the noise emitted from them, the shutting down of plant when not in use and the use of site hoardings/temporary noise barriers, including at temporary construction compounds.

1.3.1.7 The Applicants note that the measures already included within the oCNVMP will contribute to minimising construction noise and vibration impacts at equestrian receptors. However, the Applicants consider that further specific measures may need to be considered to minimise the impacts at these and other equestrian receptors identified in this study, with a particular focus on minimising the impact of sudden noise events. Such activities which may give rise to such events include but are not limited to:

- setting up and decommissioning of temporary construction compounds (Wrea Green and Quaker Wood Stables);
- deliveries to operational construction compounds (Wrea Green and Quaker Wood Stables);
- installation of sheet piling to support trenchless techniques entry and exit pits (potential for all receptors);
- drilling associated with trenchless techniques (potential for all receptors); and
- reversing alarms on vehicles (all receptors).

1.3.1.8 In these circumstances, additional measures are available to control the impact of such events, which include the following:

- timing such activities, as far as reasonably practicable, to days and times when horses not likely to be near them, or arrangements can be made to remove horses from land while activities are being undertaken;
- handling deliveries and materials in a manner which minimises noise and vibration;

- selection of low vibration equipment or operate equipment in low vibration modes where practicable;
- consider if non vibratory methods can be used for compacting haul roads and backfill material;
- consider enhancing sound insulation measures to any affected internal facilities; and
- applying BHS guidance to shut down machinery or stop movement and noise, as far as reasonably practicable, where horses are within 20 m / 50 m of construction activities. The application of any measures set out in this guidance will be informed by the bespoke Communications Plan between the equestrian receptor and their appointed Agricultural Liaison Officer (ALO) and Principal Contractor.

Engagement with affected receptors

1.3.1.9 As noted in **paragraph 1.3.1.3**, the Applicants recognise the key role that engagement with affected equestrian receptors will have in identifying measures which will be most effective at reducing the risk of adverse noise impacts at a particular location.

1.3.1.10 The Applicants are already committed to engagement with various receptors across the Projects, which include those equestrian receptors identified in this study as likely to be at risk of construction noise and vibration impacts. The relevant commitments are as follows.

Outline Code of Construction Practice (oCOCP) (REP5-044)

1.3.1.11 The Applicants are committed to appointing an Agricultural Liaison Officer (ALO), who will be the dedicated point of contact for ongoing engagement about practical matters with landowners, occupiers and their agents during the pre-construction and construction phases.

1.3.1.12 The scope of works included in the ALO role include arranging meetings with landowners, occupiers or their agents to minimise disruption where possible to existing farming regimes and timings of activities. Such meetings will provide the opportunity for these equestrian receptors to discuss planned construction activities with the potential to trigger horses and identify appropriate noise and vibration mitigation measures to minimise/avoid such events.

CoT79: Outline Construction Noise and Vibration Management Plan (oCNVMP) (REP5-054)

1.3.1.13 In the update to the oCNVMP submitted at Deadline 5, the Applicants committed to engage with specific sensitive receptors during the detailed design stage to further understand their use and identify any receptor specific noise and vibration limits and any potential mitigation measures required to minimise construction noise and vibration impacts. These included the following equestrian receptors:

- Quaker Wood Stables,
- Wrea Green Equitation Centre

- Midgeland Riding School

CoT35: Outline Communications Plan

1.3.1.14 As noted in ISH4, the Applicants have engaged regularly with Wrea Green Equitation Centre in respect of the Transmission Assets. Engagement has focused on the necessary communication and the potential impacts to the sensitivity of the horses. The concerns raised by this receptor include noise and vibration, as well as communication and potential visual and odour disturbance on the horses.

1.3.1.15 The Applicants have updated the Outline Communications Plan at Deadline 6 (J1.1/F05) to include a commitment to continuing this engagement through a bespoke communications plan for Wrea Green, which will be prepared in consultation with the Centre. A draft of the bespoke communications plan was shared with Wrea Green on 17th October 2025. The Applicants note the suggested amendments made by Wrea Green and an updated draft will be shared before the close of examination. .

1.3.1.16 The aim of the bespoke plan is to outline a dedicated communications plan for all stages of the Transmission Assets, including survey and construction, which will need to be in place throughout the Transmission Asset's presence near Wrea Green. The bespoke plan will be regularly reviewed and updated in consultation with Wrea Green, as appropriate. The objective of the Communications Plan is to provide tailored information to parties which may require more detail due to the nature of their operations. The purpose of the communications plan is to provide more detail to include (but not limited to):

Information provision / gathering

- Provision by the Applicants of a list of potential activities, including schedules of deliveries and activities (via the detailed Construction Traffic Management Plan) to discuss the context of Wrea Green Equitation Centre's current operation and mitigations that can be applied (i.e. timing and location of classes and works).

Engagement.

- Regular check-in calls prior to and during any works in the vicinity (in addition to any general project updates);
- Prior information and details about the works taking place in the vicinity of Wrea Green Equitation Centre (including agreement on what constitutes in the vicinity);
- Proposed start dates and durations of works;
- The agricultural liaison officer's contact details; and
- The contractor's details and landowner liaison contact.

Mitigations

- Bespoke mitigations to be employed, relating to the key areas of concern for Wrea Green Equitation Centre including, but not limited to:
    - Layout of the temporary construction compound to minimise potential odour and visual impacts;

- Appropriate fencing and screening; and
- Measures to minimise noise and vibration impacts associated with the setup, use and decommissioning of the temporary construction compound.

- Regular review (during check-in calls) of the efficacy of mitigation measures, including the protocols contained within the Wrea Green Communications Plan, to ensure measures can be amended as appropriate.

1.3.1.17 In addition, the Project has committed to provision of an equine veterinarian or other suitable specialist to support Wrea Green Equitation Centre by advising on potential additional mitigation measures during the construction phase. This will take into account the activities carried out during the pre-construction period and ensure expert input is available to understand the horses' behaviour and advice on measures that, alongside the Applicants' mitigation, can be taken to help them to acclimatise to any changes in their environment.

1.4 Conclusion

1.4.1.1 The Examining Authority's Second Round of Questions issued on 8th September 2025 (PD-011) requested that the Applicants provide further information of how the impact of construction noise on wildlife, livestock (cattle and sheep) and horses have been assessed and what specific measures are going to be implemented to mitigate the impact on animals during construction (Q2.14.1.5).

1.4.1.2 Livestock were not identified as receptors sensitive to construction noise and vibration at the pre-application or scoping stage and therefore impacts on these were not assessed or reported in the ES. The Applicants refer to their response to REP3-101.8 (REP4-094), which includes reference to available research on noise and livestock, how this relates to construction noise levels limits proposed for the Transmission Assets and the range of mitigation measures which may be considered to reduce noise impacts on both livestock and horses.

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1.4.1.4 Within this study, reported in this technical note, the Applicants have:

- reviewed available research and guidance which have reaffirmed its understanding that sudden noises can trigger horses to respond and therefore risk adverse impacts at equestrian receptors;
- identified approaches to mitigating impacts, referring to current commitments to managing construction noise within the oCNVMP and

potential additional measures to be considered on a receptor basis to control the impact of sudden noises and construction vibration; and

- identified the key role engagement with the affected equestrian receptors throughout the pre-construction and construction phases, referring to its current engagement commitments.

2 References

Arup (2017) Phase One 'High Speed 2 Limited Phase One Noise effects on Livestock' 236118-57/ R01- Issue

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Janicka W., Wilk I., Ryżak M (2022) Horses' perception of threat posed by sounds of different origin. Med. Weter. 2022, 78 (8), 401-413

The British Horse Society (BHS) (2024) Advice on - Construction sites and horses

The British Horse Society (BHS) (2025) Advice on - Noise on routes used with horses

Appendix 9 - Telegraph Article April 2025 (Racing could be the next victim of net zero battery obsession)

[redacted]

Racing could be next victim of net-zero battery obsession

Newmarket's 3,000-horse population and human residents 'should prepare for emergency evacuation' if controversial development gets go-ahead

53 Gift this article free



A fire at a BESS facility in California in January, the fifth in four years at the same site, burned for three days Credit: Nic Coury/Bloomberg

[redacted]

14 April 2025 9:03am BST

“Newmarket should prepare for an emergency evacuation of its 3,000-horse population and human residents if the neighbouring 77-acre Battery Energy Storage System [BESS] goes ahead.”

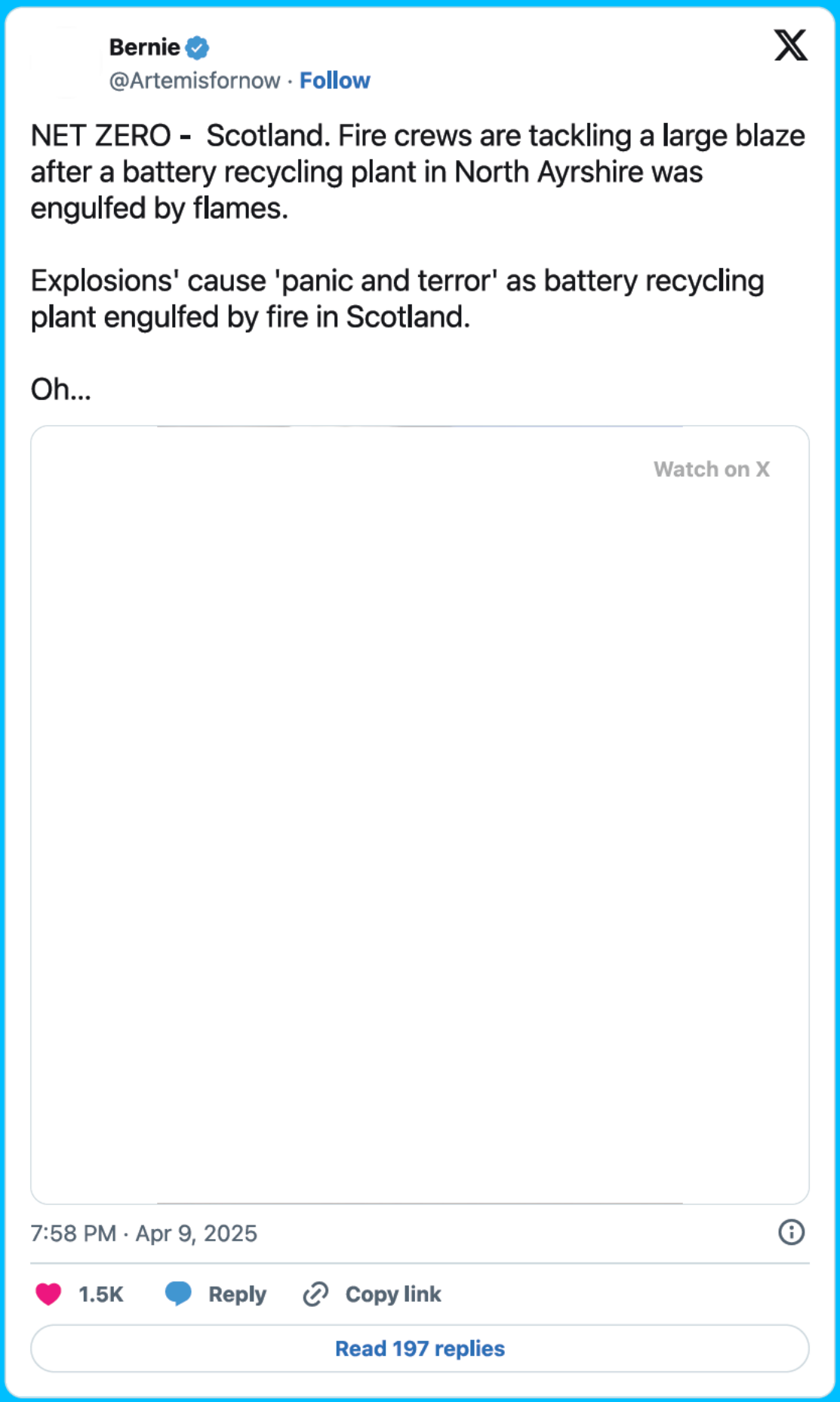
That is the opinion of Professor Peter Dobson OBE, Department of Engineering Science, University of Oxford and three other eminent chemistry and physics professors.

Dobson added that “far too little attention has been given to the safety issues of these potentially hazardous installations being situated close to residences and animals”.

Given the number of recent fires and explosions at lithium-ion battery storage systems in the UK and around the world, the professors’ alarm is hardly surprising.

Lithium-ion batteries are “inherently unstable” and are prone to a phenomenon called “thermal runaway”. The result is a self-propagating fire which takes days to extinguish and belches out toxins over a wide area, not to mention the firewater run-off which has the capacity to poison an entire aquifer.

This year alone there have been fires at BESS sites in Aberdeenshire, Gloucestershire and Essex in the UK. The biggest fire in January was in California that took three days to extinguish after residents within a three-mile radius had been evacuated. It was the fifth fire in four years at the same site.



Days later there was a serious fire near Melbourne, Australia that took 70 firefighters to extinguish. A day after that, in Galway, Ireland, firefighters were hospitalised by toxic fumes and 1,300 people were evacuated at a lithium-ion battery fire.

But as a direct result of energy secretary Ed Miliband's reckless and futile race to net-zero carbon, our economy is being trashed and the safety of everyone living in the vicinity of a BESS facility is being wilfully swept under the carpet.

Miliband is well aware that there are currently no government regulations being applied to ensure the safe manufacture, installation, operation and decommissioning of lithium-ion battery facilities.

There is also no legislation preventing the use of second-life lithium-ion batteries which pose an even greater safety risk.

Should such regulations exist, one would imagine that they would stipulate that explosion-prone BESS facilities should not be placed above high-pressure gas mains, as is the case with the proposed BESS site next to Newmarket.

Miliband passed this development in spite of the Planning Inspectorate turning it down. Not surprisingly, he has now passed the buck to Cambridge and Suffolk county councils.

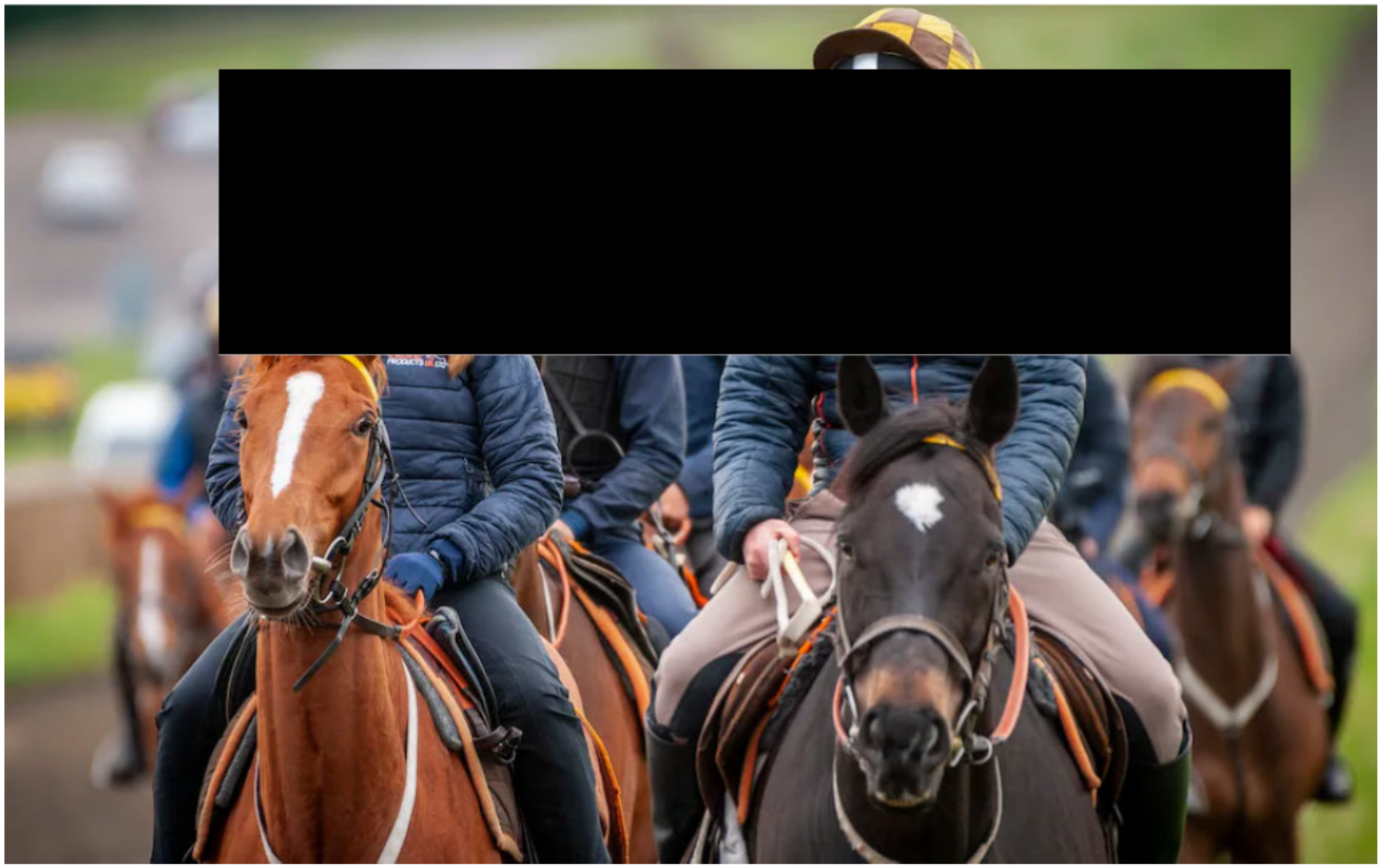
They will have to decide, without the guidance of any government regulations, whether this scheme is safe. And my guess is that they will not have the expertise or resources to make a sound, or indeed safe, decision.

In addition to the danger this BESS facility holds for Newmarket, there are three wider moral issues that the councils should not turn a blind eye to, even if they are way out of their depth.

The first is that these BESS sites are required because we are increasingly reliant on unpredictable renewable power that is not guaranteed to create enough electricity when it is needed

Secondly, there is a question of the morality of these facilities, which will buy cheap electricity off the National Grid, store it at times of peak output and then resell it back to the Grid at a higher price.

There is also another more poignant moral issue. About 70 per cent of all BESS units and components are made in China, where they care not how the electricity is generated during the manufacturing process. Add to that the environmental damage created by mining lithium and the lack of recycling centres anywhere in the world for these batteries.



Newmarket has been warned to prepare for an evacuation of its 3,000-horse population and human residents if the proposed nearby BESS facility is green-lighted Credit: Jason Bye

Given that it is two to three times more expensive to recover the rare metals from the batteries than mine more, it is clear the environmental damage caused by their production will only increase.

In effect, we are simply exporting our climate-change impact across the world to meet a spurious target.

The councils may also wish to consider the possibility that forced labour is used to create them. Government assurances that the Uyghur people are not being exploited by the Chinese to produce goods for the UK are nothing more than empty, weasel words.

There is also the security issue of covering our best agricultural land with Chinese hardware. It would be ludicrous not to assume that the Chinese government will be permeating these batteries with microchips obedient to Beijing. So how is that going to play out?

The experts believe that "there is a growing suspicion that details [of BESS fires] are being suppressed".

In layman's terms, lithium-ion battery failures could well be the biggest environmental disaster this country has ever witnessed. Especially if you locate them near gas mains!

RECOMMENDED

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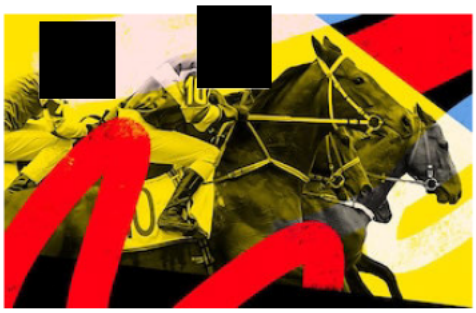


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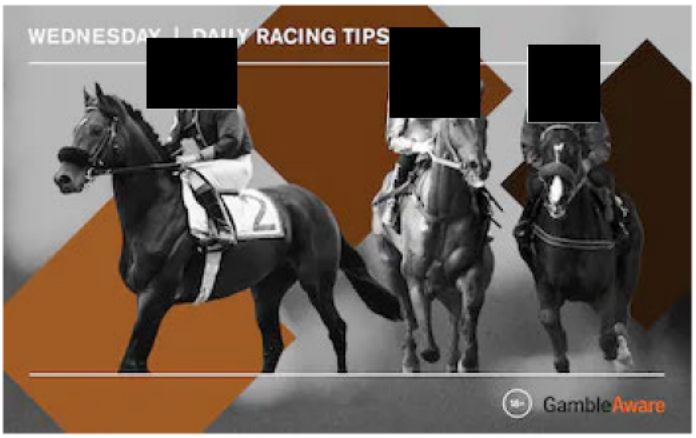




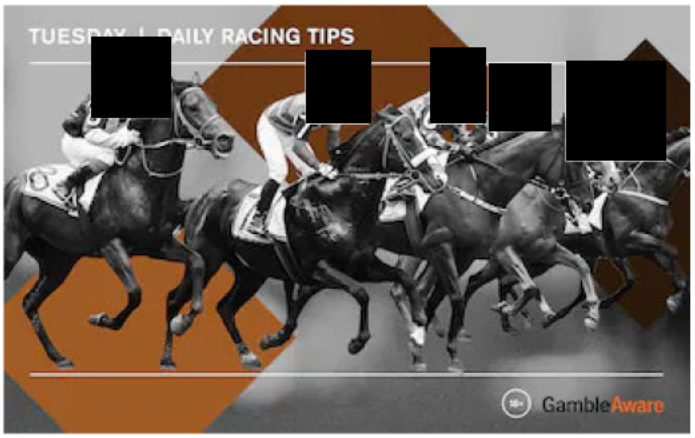
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Racing betting guides

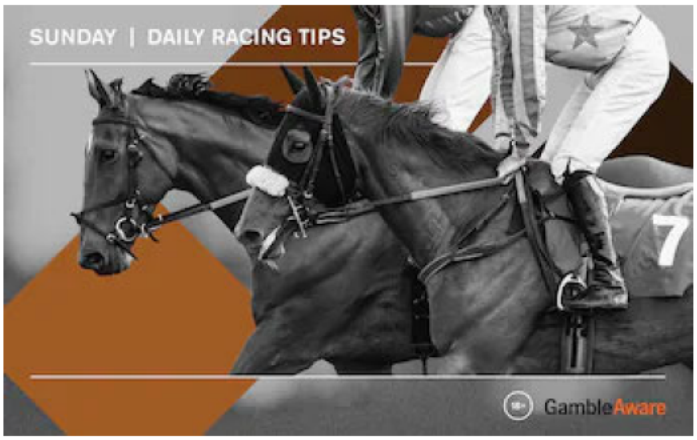
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Appendix 10 - Racing Post Article June 2024 (Lime Down stud owners under threat)

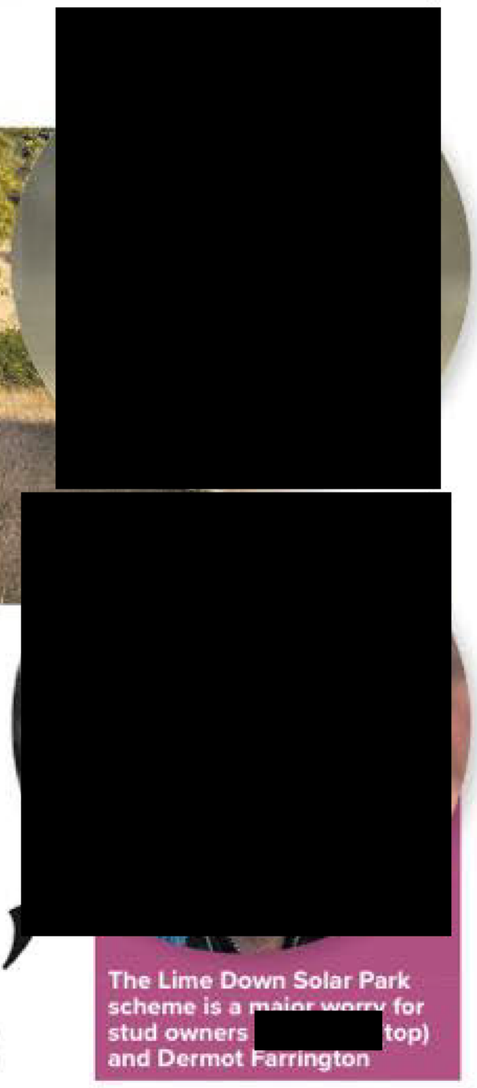
Racing Post Bloodstock

[redacted] chats to well-known industry figures whose way of life is under threat from a solar farm project

[redacted]



'It's crushing, it would finish us'



The Lime Down Solar Park scheme is a major worry for stud owners [redacted] top) and Dermot Farrington

TWO stud owners are among those facing an uncertain future due to a plan backed by the Duke of Beaufort to build a 2,000-acre solar farm.

The Lime Down Solar Park scheme is designed to generate 500 megawatts of clean energy, but would ruin large areas of countryside near the Fosse Way, a Roman road.

Part of the solar farm would be on the duke's 52,000-acre Badminton estate in Gloucestershire, as well as on land in a triangle between the market towns of Malmesbury, Tetbury and Chippenham.

[redacted] owner of Ladyswood Stud in Sherston, Wiltshire, about five miles west of Malmesbury, and Dermot Farrington, based at West Park Farm, Corston, about three miles south of Malmesbury, strongly oppose the development along with thousands of like-minded local residents and businesses who fear it would wreck the area for walkers, riders, tourists and biodiversity.

The scheme, which is in the consultation stage, is classified as a Nationally Significant Infrastructure Project (NSIP) due to its scale, meaning permission needs to come from the Secretary of State for the Department of Energy Security and Net Zero, rather than Wiltshire Council. Claire Coutinho holds that position, but the general election on July 4 could change things.

[redacted] also chief executive of the Tote, says: "We're talking 13 square miles of villages, and everyone is vehemently against it. It would make a lot of noise and would make the whole area incredibly unattractive. You would have lorries coming along single-car lanes for two years.

"Wiltshire Council voted 75-2 against it a couple of Tuesdays ago. If this wasn't NSIP, it would have been blocked straight away, but because it goes to government level, you just have no idea.

"It's a very opaque process. Previously these things were very locally driven, quite formulaic and took a long time; now, because it's at state level, it's going to happen quicker."

[redacted] as owned Ladyswood Stud, which adjoins an area of outstanding natural beauty and provides boarding, foaling and rest and recuperation for racehorses out of training, since 2018, when it was purchased off [redacted]

Farrington is [redacted] son-in-law, having married his daughter January, and the couple lived at Ladyswood – so there is a strong connection between the studs under threat.

[redacted] ontinues: "We've got ten mares, 170 acres and employ six people. It's crushing really, it would finish us.

"I've been quite vocal but we've got an extraordinary number of people around us who have been much more vocal than I have.

"There are tenth-generation families in the village. They care about the footpath massively, and there's a huge mental health angle to this. There are lots of local bridleways, they'd all be shut down. It's difficult to see the upside."

Farrington, a well-known bloodstock agent as well as stud owner, can't see one either.

"For starters. it's very unclear where they're going to try to put cable lines," he says. "If you don't agree with letting them do it, they can go as far as getting CPOs [Compulsory Purchase Order]. There's no clarity over how long it's going to take to build everything, if they get planning permission.

"We had a pretty snappy letter from a company that basically said fill in these forms as we're looking at your land as a possible cable route. There was a long questionnaire, a map of your property asking you to verify the land is yours, and we were asked to send it back by a certain date.

"Imagine if I sent you a letter today, saying can you verify this is your house, how many bedrooms have you got, and can you get the information back to me by such and such a date.

"These are not government bodies, they're private companies, and you can imagine the worry."

FARRINGTON has owned West Park for five years and fears the financial and emotional investment that has gone into it could be undone.

"In terms of trying to run a stud farm, there's obviously uncertainty there, including noise, both when under construction and after it's built," he says.

"Solar farms are a big issue for the equine industry, including in Newmarket and near Punchestown, as well as here. There are stud farmers in County Kildare facing the same thing.

"If you're sailing against it you're accused of nimbyism, which is ridiculous because nobody in their right mind would be against renewable energy, but you can't just not take into account the people who are living here or running businesses.

"This was an old dairy farm and we've invested in turning it into a stud farm. It's an important part of my business. We breed, and employ people locally.

"We've yearlings who'll be getting ready for the sales, close ties with Australia and a mare here in foal to Frankel on southern hemisphere time, and two fillies by Frankel arriving from Australia. Imagine, when I bring my punters here, if they are next to a building site . . ."

Farrington cited a recent high-profile example of how easily horses can be affected by loud noises.

"Look at the army horses in London a few weeks ago, they're trained to the minute but can still get spooked and run around," he says. "We're at the end where we've got foals, yearling and mares.

"I'm all for progress but what do I say to my team here? 'Oh, we can't take these fillies because I don't want to be bringing them here with the construction.'

"Ultimately, if they came across my land with cables, I'd have to shut the place down."

[redacted] e his near-neighbour, is adamant nimbyism is not something that should be levelled at protestors, who fear the development, comprising three and a half square miles of 14ft-high solar panels surrounded by security fencing and floodlights, would be turned into housing once the solar farm has served its purpose.

"There's absolutely no element of it," he says. "People here are pro-renewables, but the government's own guidelines state these developments should occupy brownfield sites, not greenfield.

"This is all agricultural land, it borders the Fosse Way, an area of outstanding natural beauty. It's an extraordinarily rich ecosystem, which we're trying to preserve. It's next door to [the King's] Highgrove.

"I don't think anyone in the UK would choose greenfield over brownfield, and brownfield sites around us haven't even been examined.

"It's already the most concentrated area of solar in the UK, out of all the counties, so they're just playing on a system. It's been outlawed in Germany, Italy, Spain, it's all brownfield and rooftops there."

James Gray, MP for North Wiltshire, last month made the same point in parliament about heavy local concentration of solar farms.

"If the minister [for Nuclear and Renewables, Andrew Bowie] had wanted to see the impact that a massive solar farm, such as the so-called Lime Down carbuncle in my constituency, will have on local people, he should have come to the public meeting I called in Malmesbury town hall last week, where 750 people were protesting against this appalling plan in North Wiltshire," he said.

"It's going to be 2,000 acres of panels, 3,000,000 panels, 5,000 acres blighted, and 30 miles to the nearest connection at Melksham. It's an absolutely disgraceful proposal. It comes at a time when Wiltshire has eight out of ten of the largest solar farms. We already have enough, vastly exceeding our county target for solar production."

[redacted] as reservations about solar power performance generally, saying: "I've real scepticism about its efficiency in the UK anyway; it's 40 per cent efficient versus the US, and then when you go even 20 miles [to a connection], it's even less so. We've had developers over and asked them why this is deemed to be attractive in their eyes, and they've just said, 'Because it's cheap.'"

Farmers are reported to have been offered in excess of £1,000 per acre per year to rent their land – multiple times the return which might be expected from farming – howeve [redacted] id: "It sounds a lot of m[redacted]y, but the developers are making somewhere in the region of £50,000 an acre.

"And the Duke of Beaufort's family is among the most wealthy in the country. The whole thing is very strange."

A spokesman for the Duke of Beaufort told the Daily Telegraph: "The estate's decision is commercial and aligns with government guidance that the development of low-carbon infrastructure, such as solar farms, is a critical national priority."

Lime Down claims it would "contribute towards government targets to reach net zero by 2050" and could provide "enough clean, affordable electricity to power around 115,000 homes".

Lime Down's developer is a London-based company, Island Green Power, chaired by Bertie Ahern, the taoiseach of Ireland from 1997 to 2008.

"It's government policy and there seems to be a race to get these things off the ground," says Farrington.

"But what's going to happen in 40 years' time when all this land is covered with these? I don't think people realise how big this is; it feels like every day you wake up and there's a new story from somewhere else in the country.

"The developers seem to be running hard as there are good opportunities for them after the government said they wanted to get to net zero by a certain date."

> IT'S GOING TO BE 2,000 ACRES OF PANELS, 3,000,000 PANELS, 5,000 ACRES BLIGHTED, AND 30 MILES TO THE NEAREST CONNECTION AT MELKSHAM

First-season sires with runners today in GB & Ireland

Sire	Progeny	Race
Arizona	Specified	Wetherby 6.30
Earthlight	Cayman Tai	Windsor 5.45
Hello Youmzain	Electrolyte	Ayr 2.15
Kameko	Rajeko	Windsor 5.45
Shaman	Pap's Turf	Ayr 2.15

Weekly sires of stakes winners table, page 99

Appendix 11 - Racing Post Article May 2025 (Lime Down Stud farmers in limbo amid anxious wait for solar farm resolution)

“I’ve not managed to speak to one guy who knows anything about horses or farming’ - stud owners in limbo amid anxious wait for solar farm resolution

[redacted] and Dermot Farrington chat to Andrew Scutts about concerns over the solar park project on their doorstep



A tranquil scene at Ladyswood Stud - Alex Frost and family and staff will be hoping it stays that way

Credit: Ladyswood Stud

MOR
- Kia inve Am
- Lea cha to d
- Pub Gui Stak
- Fro[redacted] Richards to Japan and Godolphin stints - meet the Newmarket trainer who has won with his last three runners
- Who will follow in Field Of Gold's footsteps? Assessing the key contenders for the Solario Stakes

Associate editor
Published on 22 May 2025 in Britain
Last updated 05:12, 22 May 2025

This month's Badminton Horse Trials, seeing they were hosted by the Duke of Beaufort, seemed an opportune time to catch up with the stud owners facing an uncertain future due to a plan to build a 2,200-acre solar farm.

Part of the proposed Lime Down Solar Park would be on the duke's 52,000-acre Badminton estate in Gloucestershire, as well as on land in a triangle between the market towns of Malmesbury, Tetbury and Chippenham.

The duke is one of ten landowners backing the industrial-scale development which, if given the go-ahead, would dramatically impact England's oldest borough Malmesbury and surrounding towns and villages.

The Fosse Way, a Roman road and scheduled monument, would be enveloped by solar infrastructure, while the area contains historically significant footpaths and bridleways.

It is also home to Ladyswood Stud in Sherston, owned by Alex Frost, and West Park Farm in Corston, run by Dermot Farrington.

The pair spoke for themselves but also thousands of like-minded local people last summer when they shared fears the solar park would wreck the area for businesses, homeowners, walkers, riders, tourists and biodiversity.

The scheme, which has gone through two stages of community consultation, is classified as a Nationally Significant Infrastructure Project due to its scale, meaning permission needs to come from

the secretary of state for the Department of Energy Security and Net Zero, rather than Wiltshire Council, which has voted against it.

Ed Miliband was appointed to that position on July 5 last year after the Labour Party's general election win and **within a week had approved the equally controversial Sunnica solar and battery farm close to some of Newmarket's most important gallops**.

That was despite a four-year campaign against it by key racing bodies, local MPs and several councils.

And, as [redacted] points out, despite UK government policy mandating the prioritisation of brownfield sites and rooftop development for renewable energy initiatives.

In the Sunnica case, the plan is to cover 2,800 acres of arable land on the west Suffolk and east Cambridgeshire border. While that is bigger still than the Lime Down proposal, Wiltshire already has eight out of ten of the largest solar farms in Britain.

[redacted], Farrington and the army of campaigners opposed to the Lime Down development hope the tide is turning, in terms of public acceptance of renewable energy projects and concerns about land use and environmental impact, to the extent planning permission is never granted.

"Miliband's now talking about the logical stuff like putting these on rooftops – and I think this is the core of the argument," says [redacted], who is also chief executive of the Tote.

Stud owner and Tote chief executive [redacted]: 'Nobody has any quandary with green power, it's just where you put it' Credit: Tote

"Nobody has any quandary with green power, it's just where you put it. Devastating the British countryside feels like a suboptimal solution, which I think everyone agrees upon, and government policy is brownfield sites and rooftops."

As of last summer, brownfield sites in the local area had not even been examined. Updating on that, [redacted] says: "Nothing's been done. There are some areas that have been identified but what it comes down to is that they can make more money taking out local farmers."

Farrington's frustration is equally clear, and while he has attended several consultation meetings, he is not much the wiser for the experience.

"In terms of the core questions for my business, they've not really clarified anything," he says. "Every time you ask a question, you don't get definitive answers. Most of it is spin. Everything is very unclear, timeframes, traffic, noise levels.

"There's been no clarity over what's going to happen when you start banging posts into the ground for weeks or years on end, how long it's going to take. Does it, or does it not, make noise?

“They’re trying to point out positives, but when you’re putting in millions of solar panels, there’s got to be some noise for a long time around the countryside.

“There’s nobody there at the meetings who’d have any knowledge of the effect it would have on an equine business. Nobody had a grasp on a subject like flooding.

“They don’t know what effect the building of, and operation of, a solar plant next to a stud farm would have.

“I’ve not managed to speak to one guy who knows anything about (a) horses, (b) stud farming, or (c) farming.

“They’re perfectly nice people, but unqualified, and it seems extraordinary that you’d let them loose on the countryside.”

Dermot Farrington: 'In terms of the core questions for my business, the consultation meetings haven't really clarified anything' Credit: [redacted]

Aside from the impact on England’s increasingly less green and pleasant land, which in itself is surely reason enough to harbour huge doubts, there is growing concern over the safety of lithium-ion battery storage, including fire risk and toxic emissions.

[redacted] says: “There’s no net economic impact survey done by these guys, they don’t mind that they’re going to smash up the local area, and it’s the same with the other site, Sunnica.

“There’s huge concerns with the local community, there’s massive fire risk, a survey has been done and it reckons the impact area is nine miles in radius. The batteries they are putting into this plan are about 100 yards away from a railway line.

“There are any number of horses, animals and people living next door to them. It just doesn’t bear thinking about.”

[redacted] adds: “It’s worth mentioning that it’s essentially been banned in most of Europe, and there are huge restrictions in the US; that’s why you’re getting this flood of capital coming from people like Macquarie.

“They bought out their business partners; it was a 50-50 joint venture between them and an Irish group called Island Green Power. They have raised huge amounts of money for green energy funds and have got very few opportunities now, with most of Europe and the US shut down.”

Farrington certainly isn’t convinced by environmental arguments either.

“The whole idea of this is you’re trying to be environmentally friendly, but people are starting to cop on to the fact these panels will ultimately end up in landfill after not all that long a lifespan, 20 or 30 years or whatever it is,” he says.

“This whole solar panel thing is debatable and dubious about whether long term it’s going to be

good for the environment. There are huge doubts.

“There’s no clarity about what’s actually going into these panels, what chemicals, what precious metals are being minded to go into them, how often you are going to have to change them or who is going to do this. At the consultation meetings, there were very wishy-washy answers to most questions.”

Referring to the Badminton host, the Duke of Beaufort, [redacted] says: “If one guy had his way, he’d do another 50 of them as he’s a bit of a zealot when it comes to the ideology of this.

“But Tony Blair made some pretty good points, saying there’s got to be a balance here and that we don’t need to be putting this stuff in areas that are core to what we’d refer to being the fabric of the country.

Tony Blair: former prime minister has called for a rethink on net zero policies — Credit: Getty Images

“There’s panic about an arbitrary net zero target the next generation would have to live with. It would look very out of place in three or four years’ time – all this carbon-capture technology is mega-sophisticated; 1.3 million solar panels across an area of 11 miles in diameter is just going to look very stupid very quickly.”

The local stud owners are among the near-1,200 signatories to an open letter sent to landowners urging them to reconsider their decision to participate in the solar project.

The Stop Lime Down campaign is certainly doing all it can to generate interest and support, while its website has a simple opening message: 'Yes to solar, no to these irresponsible proposals, protect our countryside.'

Farrington says: "The local community has worked very hard, with lobbying and raising awareness of why this isn't a good idea for anybody.

"The protest group, Stop Lime Down, have had information evenings, and the halls have been jam-packed with concerned people.

"Thanks to a lot of people who have worked really hard to point out what's going on, the penny is starting to drop that this government is hellbent on pushing this through without a real mandate from the people to do it.

"In this locality, and generally, people are starting to realise what's being forced on them. People are starting to realise that there's going to be an adverse effect on their property values, whether you're right next to it or not. If they do get planning permission, this will change the face of the countryside.

"You might not open the curtains and see the solar panels, but all of a sudden you might have to drive through a solar park to get to your house."

He adds: "A neighbour of mine had a house for sale, it's fallen through and is directly linked to all

of this, the prospect of the unknown. They're now looking at a 30 per cent hit on the price.

"These guys' attitude to people who've got a mortgage on a house and then the next thing you know, your value's gone down, is, 'Oh, too bad.' It is disgusting really. I feel strongly about how such a small number of people can have such a huge effect on so many.

"When you start covering 2,200 acres, that's a lot of people caught up. Bar those who would get money directly from the developers, most are anti this and scratching their head about how it's going to work."

[redacted] and Farrington's equine businesses are somewhat in limbo, and will be until the matter runs its course.

"We have got 18 mares now, up from ten when we spoke last summer – we bought an extra couple of paddocks, annoyingly, just before all this broke out," says [redacted].

[redacted] Ladyswood Stud is up to 18 mares having expanded just as the Lime Down project was being envisioned

Credit: Ladyswood Stud

"It's very frustrating because we're a small business that will be absolutely devastated."

Farrington recounts: “The other day I had a low-flying helicopter go over, which spooked my yearlings and I had one go over a gate and ended up with nearly three grand worth of surgery to put humpty-dumpty together again.

“It's an example of a change in the status quo on the farm. So you could imagine what happens if these guys are next door. We have just been left wondering, and hoping that they won’t get permission.

“It’s worrying, and it stops progress. We were hoping to put planning in for a new barn, and add more staff to the farm, grow the business, but you’re reluctant and you’ve one eye on this all the time.

“You’re thinking, is a new barn a good idea because will I be able to run a horse business from this farm in five years’ time? We’re at a standstill as far as growing the breeding business and the pinhooking business is concerned. We can’t do it and it’s very disappointing for me and my staff.

“It holds up progress. We’re not stopping but, at the same time, everyone likes the excitement of getting bigger.”

He adds: “What sticks in my gut, and I’m sure a lot of other people’s, is that if you go for planning permission yourself, if you wanted to build a house, or change a house, put an extension on, etc, you’ve rightly got all these rules to follow and it’s quite the job to get permission. Yet there’s this, and you get called that awful word ‘nimby’ because you’re objecting.”

That certainly can be a lazy, shallow term to apply, and, let’s face it, how many people would want a

solar farm in their back yard, whether there are horses about the place or not?

Whether the Stop Lime Down campaign is successful remains to be seen, but there is a sense that whatever zeal is out there for such large-scale developments is looking less likely to ultimately hold sway.

Farrington says: “Every time that they put in planning for a new solar farm around the country, they say this will power 100,000 houses and electricity is going to be cheaper, but I don’t think anyone is buying that any more.

“I feel that from the north of England to the south, people are beginning to realise that when all this stuff connects up, it’s huge. Eventually, people aren’t going to put up with it, and I just hope it’s in time for us.

“I’m just hoping that by the time these guys put in planning permission, the tide will have turned and people realise this isn’t the answer.”

This article first appeared in Good Morning Bloodstock.

To celebrate The Story of Horseracing in 20 Races, the Racing Post's big weekly series for 2025, you can get your first month of Racing

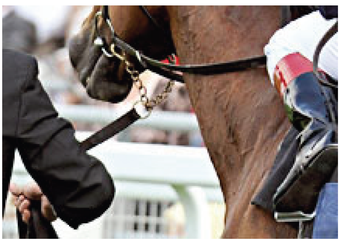
Appendix 12 - Horse and Hound Article Feb 2011 (electrocution caused by cable under parade ring at Newbury Racecourse)



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Accidental electrocution was cause of Newbury horse deaths

Horse & Hound
17 February, 2011 15:11



British Horseracing Authority Electrocution Newbury racecourse

Accidental electrocution has been confirmed as the cause of death of two horses killed in the paddock at Newbury racecourse on Saturday (12 February).

The rescheduled race meeting — The Totesport Trophy Hurdle Meeting — will take place tomorrow (Friday 18 February).



Marching Song, trained by [redacted] and the Jonjo O'Neill trained [redacted] both collapsed and died after suffering an **electric shock in the parade ring** before the first race.

Post mortem results from the horses, returned today (Thursday 17 February), show sudden **cardiac arrest** as the cause of death for both horses.

Investigations show an electrical discharge in the area killed the horses.

"The Authority has been officially informed that there was leakage of electricity from a cable under the parade ring in the area where the incident occurred," said [redacted] director of equine science and welfare at the British Horseracing Authority (BHA).

He added that samples taken from the horses affected showed "no evidence of substances" that could have caused the incident.

"These findings are all consistent with the cause of death being accidental electrocution and at this stage we are not investigating any other cause of death," he said.

He also confirmed that the post mortems had shown **no evidence of any burn marks** around the horses' mouths.

"There was immediate veterinary attention, and our enquiry on the day noted the racecourse veterinary surgeons felt a tingling sensation when examining the horses, and that the veterinary surgeons noted particular clinical signs such as muscle contractions," he added.

An electric cable previously located within the parade ring has now been removed and disconnected. And Newbury racecourse and Southern Electric Power Distribution have assured the BHA that the **area is safe to be used**.

[redacted], joint managing director of Newbury racecourse added: "The investigation by Southern Electric Power Distribution continues, to establish the cause of the electrical leakage. I would like to stress again that Southern Electric has confirmed that there was no danger to the public on Saturday.

"Once again we would like to extend our condolences to the connections of those horses and will continue to liaise with those affected."

A wider review is still ongoing and a report will be published at a later date.

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Appendix 13 - Irish Field Article March 2025 (Bloodstock industry warned of treat from solar battery projects)

Bloodstock industry warned of threat from solar battery projects

[redacted]

LEADING equine veterinary surgeon [redacted] is raising awareness in the bloodstock industry of the serious health and safety issues posed by large battery energy storage systems [BESS].

[redacted] a partner in Troytown Equine Hospital in Kildare, is a member of a campaign group — Two Mile House Says No — which is opposed to the installation of a BESS at Dunnstown, near Carnalway, for which planning permission was refused by Kildare County Council, but which is now the subject of a second appeal at An Bord Pleanála (ABP).

The group claims that the proposed development poses significant risks to the local community and the bloodstock industry through the potential for evacuation orders, exposure of horses to toxins, and disruption to round-the-clock care for foaling mares and young stock.

The Dunnstown project consists of 76 shipping containers of lithium-ion batteries with associated infrastructure and, with a 200MW capacity, it can store 800 megawatts of energy.

[redacted] now concerned about a new 200MW BESS proposal as part of a joint solar and BESS industrial project within 2km of Kilcock in North Kildare, also adjacent to many thoroughbred studs.

He says if these batteries caught fire and went into thermal runaway, a 'stay-in' or evacuation order may be required and an enormous amount of water would need to be available to deal with cooling the batteries.

In January, a fire at a 300MW BESS in California prompted a 20-square kilometre evacuation order.

No regulator

[redacted] told *The Irish Field*: "My wife, [redacted] also a veterinary surgeon, and I have spent three years researching this, and we are concerned for the rest of the country.

"There is no appointed safety regulator for lithium-ion batteries. None of the safety bodies that we have cover this area, so therefore it is not obligatory for international safety standards or guidelines to be implemented here.

"Lithium-ion batteries are a novel technology. Under EU legislation they require a notifying authority to oversee their safety and Ireland does not have one.

"In the meantime these planning applications are being submitted and there are two major issues not being dealt with – fire suppression and emergency access to the site."

[redacted] says a battery fire would have catastrophic consequences. "The UK's National Fire Chiefs Council state that



"You would need access to 1,900 litres of water every minute for the first two hours to cool the batteries."

you would need access to 1,900 litres of water every minute for the first two hours to cool the batteries. This is not addressed in the planning application."

Some BESS fires have required up to nine million gallons of water.

[redacted] added: "The batteries would release a huge amount of toxic gas, meaning that an evacuation order would be needed. People could be moved but animals would be exposed for three to five days."

He cited a recent BESS fire in California which saw toxin levels in the soil reading 1,000 times higher than normal within a two-mile area.

Fire hydrants should be installed around the site and there needs to be two emergency access points, [redacted] said, in case smoke blocks one entrance. Again, this is not being taken into account in Irish planning applications, he says.

Residents in the area argue that the application lacks crucial details regarding safety protocols and fails to demonstrate compliance with internationally recognised safety standards.

Safeguards needed

"The global rise in hazardous incidents involving lithium-ion batteries is alarming," stated [redacted] a spokesperson for the concerned community in Kilcock where the new facility is proposed. "With over 92 reported cases of failures in BESS systems as of February 2025, and thousands of fires linked to electric vehicles, we cannot afford to be complacent. This application lacks the necessary safeguards to protect our community from the inherent risks of this technology."

Concerns include the lack of specific measures addressing thermal runaway, toxic gas emissions (including hydrogen fluoride, hydrogen cyanide, and phosphoryl fluoride), explosion risks, and comprehensive emergency response protocols. The potential for environmental contamination is also a major worry, say objectors ,with the BESS located near the Ballycanon water course, which feeds into the Rye Valley Special Area of Conservation.

Recent case studies of BESS failures, such as the Claregalway fire in January, where a battery fire forced the evacuation of nearby schools and homes, highlight the potential consequences of inadequate safety measures.

Beyond safety, residents are questioning the suitability of the proposed solar farm's scale and location. The 235-hectare project is seen as a disproportionate industrialization of a rural landscape traditionally characterized by agriculture and open space.

"This development will lead to the elimination of farming activities, disrupt rural cohesion, and divert income away from the local area," states [redacted] "The jobs provided during construction are unlikely to be local, and the long-term employment opportunities are minimal. We believe solar panels can be integrated into the landscape in a way that minimises visual impact and preserves agricultural activities, but this application ignores that possibility."

Decommissioning costs for the BESS are also a concern, with estimates ranging from €20 million to €60 million under normal circumstances, and potentially exceeding €80 million in the event of a thermal runaway or fire. Residents worry that if the developer goes into liquidation after a failure, the responsibility for decommissioning and environmental remediation could fall on landowners or Kildare County Council, leaving a legacy of toxic waste.

"We are not against renewable energy, but we believe that this project, in its current form, poses unacceptable risks to our community and environment," concludes [redacted]



Appendix 14 - OBS March Sales results evidence

2026 Spring 2YO in Training Sale

Hip	Out	UT Time	Sex	Name	Sire	Dam	State	Consignor	Buyer	Price	PS
158	I	10.1	F		Good Magic	Silent Sister	ON	Best A Luck Farm LLC, Agent IV	D. Farrington	75000	N
211	I	9.4	C		Khozan	Starship Crystal	FL	Journeyman Bloodstock (Brent & Crystal Fernung), Agent I	D. Farrington	200000	N
538	I	10.0	C		Liam's Map	Betwixting	KY	Randy Miles, Agent I	D. Farrington	280000	N
570	I	9.3	F		Jackie's Warrior	Brazen Persuasion	KY	Hartley / DeRenzo Thoroughbreds LLC, Agent I	D. Farrington	2300000	N
851	I	20.2	F		Oscar Performance	Going Day	KY	Tom McCrocklin, Agent I	D. Farrington	675000	N

Appendix 15 - Cleve Hill Solar Farm Noise Reading



15m:52s

AVG

73.8

61.4

MAX

99.7

Camera

Dosimeter

Meter

Data

Settings

Appendix 16 - Richard Tice MP (Reform Party) letter to Macquarie Dec 2025

RICHARD TICE MP

HOUSE OF COMMONS

LONDON SW1A 0AA

[redacted]
Head of Government Affairs Europe, Middle East and Africa
Macquarie Group
Ropemaker Place
28 Ropemaker Street
London
EC2Y 9HD

17th December 2025

Dea[redacted]

I am writing regarding the Lime Down Solar Project which has recently been submitted to the Nationally Significant Infrastructure Projects process, being promoted by the Macquarie Group.

Let me put you and your investors on formal notice: Reform UK is firmly opposed to the spread of industrial-scale solar developments across the countryside. These schemes are not in the national interest, do not deliver reliable energy, and place an unacceptable burden on local communities and farmland. The drive to meet arbitrary net zero targets is causing widespread damage to rural Britain.

The Lime Down proposal is a clear example of this. A 500MW solar installation with an additional 250MW battery storage facility is completely out of proportion. The plans for three 132kV substations, a vast 400kV transmission station, and a 25-kilometre cable route to Melksham National Grid station only underline the industrial nature of the scheme.

It is also important to note that Wiltshire Council has already passed a resolution to object to this development. The county has already taken more than its fair share of solar infrastructure, with numerous other schemes still in the pipeline.

Reform UK will continue to challenge these developments and speak up for the communities affected. We will scrap Net Stupid Zero as soon as we win the next General Election. We will do everything we can to deter and stop investment in these appalling solar developments. You invest in this knowledge, caveat emptor.

The UK needs a responsible energy strategy that prioritises domestic production, food security, and the long-term wellbeing of our rural areas.

Yours sincerely,

[redacted]

Richard Tice MP
Deputy Leader of Reform UK

MEMBER OF PARLIAMENT FOR BOSTON AND SKEGNESS

EMAIL: [redacted]@PARLIAMENT.UK

Appendix 17 - Lime Down Solar Park: Claims vs Reality Document

Press Enquiries: media@stoplimedown.com | January Farrington: [redacted] | www.stoplimedown.com

CLAIMS VS REALITY

LIME DOWN SOLAR PARK · North Wiltshire · Planning Inspectorate Ref: EN010168

Stop Lime Down · April 2026

4,958	**Relevant Representations submitted** 99% opposing, the highest ever for any solar NSIP in England, exceeding Gatwick Airport
85 – 0	**Wiltshire Council cabinet vote against the scheme** Unanimous, unprecedented in the county's recent history
749 ha	**Solar panels across five fragmented sites** Plus a 22km cable corridor to Melksham substation
2,200 acres	**Removed from food production for up to 60 years** Twelve tenant farmers displaced by nine landowners
2076	**Estimated year Lime Down reaches carbon break even** Wiltshire Council's own analysis, it increases net emissions until then
1 GWh	**Proposed battery storage capacity** One of the largest BESS in England, above a principal drinking water aquifer, adjacent to a mainline railway

The proposed Lime Down Solar Park is a case study in the gap between what is claimed about large-scale solar and what the evidence shows on the ground. This document sets out 16 specific claims made by the developer, government departments, or the solar industry, and sets them against evidence submitted to the Planning Inspectorate. Stop Lime Down supports renewable energy, but it must be delivered responsibly, at the right scale, in the right locations, and without destroying the communities and landscapes affected.

A. LOCATION & SIZE

CLAIM 1: The Lime Down site was selected following a comprehensive and transparent assessment of alternatives.

Source: *IGP Application / Lime Down Solar website*

Reality: Evidence submitted to the Planning Inspectorate shows that site selection at Lime Down was significantly driven by commercial land agreements with a small number of large landowners, not by a systematic assessment of least-impact locations.

- The Site Selection Assessment Report adopted an illogical and inconsistent approach to environmental constraints: sites were not compared against the same criteria, meaning the comparison is unreliable
- IGP's own documents acknowledge the process was driven by land agents identifying 'potentially willing landowners with large areas of land. This was commercial availability, not environmental suitability
- Closer, less sensitive combinations of land parcels near Melksham were not meaningfully tested, despite potentially offering shorter cable routes and lower landscape harm
- The resulting 22km cable route is itself evidence that this is not the most suitable available location; a shorter route to the grid would indicate a better-sited scheme and not affect villages such as Castle Coombe.
- 4,958 Relevant Representations, 99% opposing, were submitted; the highest number ever recorded for any solar NSIP in England, exceeding Gatwick Airport

*See end note 1

CLAIM 2: Wiltshire is not disproportionately affected by solar development.

Source: *Solar Power Portal 'Wiltshire ideally situated for solar power'*

Reality: Wiltshire already hosts multiple large solar installations. Lime Down at 500MW would be one of the largest NSIP solar developments in England and would make Wiltshire one of the most solar-industrialised counties in the country.

- Existing major sites in the county include Lyneham, Wroughton and Snarlton
- Two additional large sites are already approved: Leigh Delamere (50MW) and Red Barn
- Lime Down's five individual solar sites would each independently qualify as Nationally Significant Infrastructure Projects in their own right
- The combined development footprint - panels, cable route, substations and associated infrastructure, covers approximately 50 square kilometres of North Wiltshire countryside
- No equivalent concentration of NSIP-scale solar exists in any other county in England

*See end note 2

CLAIM 3: Every solar project undergoes an impartial planning process.

Source: *The Political Quarterly*

Reality: Nationally Significant Infrastructure Projects are determined by the Secretary of State, who can and does override Planning Inspectors' recommendations. Lime Down has generated the most locally opposed response ever recorded in English planning history.

- In 2024, Ed Miliband approved the Sunnica Solar NSIP against the Planning Inspector's recommendation to refuse, demonstrating that ministerial priorities can override expert assessment
- Wiltshire Council voted 85 – 0 against Lime Down, the clearest possible democratic expression of local opposition; under NSIP rules, it carries no binding weight
- 4,958 Relevant Representations were submitted, 99% objecting, exceeding the previous record for any NSIP, including Gatwick Airport's expansion
- No statutory consultee offered clear support for the scheme; objections were raised by National Grid, Historic England, Natural England and the Environment Agency
- The Planning and Infrastructure Bill proposes further acceleration of developer led outcomes and reduced local oversight

*See end note 3

B. LAND, FARMING & FOOD SECURITY

CLAIM 4: Solar farms use low-value land.

Source: *Solar Power Portal*

Reality: Government policy directs that Best and Most Versatile (BMV) agricultural land should be avoided where possible. At Lime Down, the applicant itself acknowledges that approximately 240 hectares, around 33% of the solar PV area is BMV, which it describes as 'significant.'

- Natural England has stated that the BMV land assessment methodology is still under discussion, raising questions about whether the true BMV proportion is higher than claimed
- The Sunnica Solar NSIP (approved 2024) was subsequently found to include approximately 50% BMV land, far exceeding the developer's initial figure of 4%, demonstrating that applicant BMV assessments cannot be taken at face value
- The cable route corridor passes through land that is approximately 75% BMV in some sections
- NPS EN-3 (2025) states applicants 'should avoid the use of Best and Most Versatile agricultural land where possible' compliance with this cannot yet be demonstrated
- The NFU has warned that removal of planning protections for BMV land will 'create further instability for those facing compulsory purchase of their land'

*See end note 4

CLAIM 5: Utility scale solar does not affect food security.

Source: *Solar Energy UK*

Reality: At Lime Down, approximately 2,200 acres would be removed from food production for up to 60 years, a generational change in land use, not the temporary one described by the applicant. Twelve tenant farmers face displacement.

- The UK imported £64.1 billion of food in 2024 but exported only £24.6 billion, a large and growing deficit (DEFRA UK Trade in Food 2024)
- Only 62% of all food consumed in the UK was domestically produced in 2023 (UK Food Security Report 2024)
- A 60-year operational life is functionally permanent: no scheme of this scale has ever been decommissioned and there is no reliable evidence that land can be fully restored afterwards
- The scheme is enabled by nine landowners, many of whom do not farm the land themselves, displacing twelve tenant farmers
- Proposed 'soil improvement' under panels is based on studies of ten years or fewer; no credible evidence supports the improvements claimed over 60-year timescales

*See end note 5

CLAIM 6: Dual-use farming and sheep grazing under solar panels provides genuine agricultural benefit.

Source: *Lightsource bp (Australian study)*

Reality: At Lime Down, the 4.5-metre tracking panels are substantially taller than standard solar installations and create conditions incompatible with meaningful agricultural activity. 'Dual use' is a marketing term, not an independently verified outcome.

- Up to 700,000 panels at 4.5 metres high, with tracking motors, cabling and inverter compounds create direct injury risks for livestock
- Shading under panels can reduce herbage yield by up to 56%, even where stocking rates are managed to compensate (US agrivoltaic research)
- Livestock grazing under panels damages the ground vegetation, which must remain intact to absorb water runoff and prevent soil erosion, a direct conflict of land uses
- The Australian study cited was conducted at a conventional fixed-tilt farm; its findings do not apply to the 4.5m tracking panels proposed at Lime Down
- Microplastic shedding from panel degradation is an emerging and unquantified risk for livestock and soils; no assessment has been carried out

*See end note 6

C. ENVIRONMENT, ECOLOGY & HERITAGE

CLAIM 7: Solar farms are good for wildlife.

Source: *Solar Energy UK*

Reality: At Lime Down, Wiltshire Council and Natural England identified significant gaps in the ecological survey data, meaning the impacts on numerous protected species have not been properly assessed. Large fenced industrial sites inevitably fragment habitats.

- Survey data is absent for brown hare, hedgehog, polecat, dormice, harvest mice, reptiles, invertebrates, otters, water voles and white-clawed crayfish across the site
- 17 hectares of the cable route corridor were entirely unsurveyed due to access issues; no bat surveys were conducted despite the site's proximity to bat Special Areas of Conservation
- The applicant's own Environmental Statement admits that approximately 71% of skylark and yellow wagtail nesting habitat within the panel areas would be destroyed
- Approximately 10 kilometres of new security fencing would fragment wildlife corridors, affecting movement of mammals and ground-nesting birds across the site
- In July 2025, a BBC report documented deer being trapped inside a UK solar farm, illustrating real-world welfare risks from large fenced installations

*See end note 7

CLAIM 8: Lime Down will enhance wildlife habitats and achieve biodiversity net gains.

Source: *Lime Down Solar website*

Reality: The biodiversity net gain figures submitted for Lime Down are modelled on paper, not measured in reality. The calculations contain errors, were submitted in a format that cannot be independently verified and include double counting.

- The BNG calculations were not submitted in the required unlocked format, making independent verification impossible
- IGP's own submission acknowledges that the BNG trading rules, which set minimum requirements to compensate for specific habitat losses, have not been satisfied
- Habitats created as mitigation for destroyed habitat have been counted a second time as biodiversity gain inflating the claimed net benefit
- Wildflower meadows, the primary claimed habitat creation, require nutrient-poor soils, which at Lime Down means deliberately downgrading productive agricultural land that currently supports a wide range of species
- No independent long-term evidence exists for biodiversity improvement under solar farms of this scale over 60 years in the UK

*See end note 8

CLAIM 9: Solar farms do not increase flood risk.

Source: *Solar Energy UK*

Reality: Lime Down sits in an area already experiencing severe and increasing flood events. Storm Bert (November 2024) flooded Chippenham and Bradford-on-Avon; Storm Claudia (November 2025) flooded Malmesbury for the second time in twelve months. The Environment Agency was not satisfied with the applicant's flood assessment.

- The Environment Agency's scoping response identified factual inaccuracies and inconsistencies in the flood risk assessment, stating it was 'not satisfied' with the site description or its conclusions
- Significant areas of Lime Down D and E already fall within Flood Zones 2 and 3
- The 4.5-metre tracking panels are larger than standard solar; rainfall falling from 2.5 metres height has over six times the kinetic energy of water from standard panel height, increasing runoff and soil erosion risk
- The applicant's flood assessment used rainfall data from Yeovilton, 68km away, despite 11 closer Met Office stations all recording higher rainfall and resulting in a 14% underestimation of climate-adjusted rainfall effects
- Bradford-on-Avon's flood defence scheme was cancelled in July 2025 despite Storm Bert devastation, leaving downstream communities without protection if the scheme increases runoff

*See end note 9

CLAIM 10: Lime Down's heritage impacts have been properly identified and assessed.

Source: *IGP Application*

Reality: Historic England identified a material error in the heritage assessment: Bradfield Manor was described throughout as Grade II* listed, when it is in fact Grade I. This is the highest heritage designation in England. The implications of this error for the assessment remain unaddressed.

- Bradfield Manor (Grade I, NHLE 1198808) is located adjacent to the proposed BESS facility. It's designation was misstated throughout the application, undermining confidence in the heritage assessment as a whole
- Historic England formally identified unresolved harm and serious documentation gaps in its Relevant Representation to the Planning Inspectorate
- The Fosse Way Roman Road, a Scheduled Ancient Monument and iconic heritage route, runs through the scheme for approximately 4.5km; the significance of the character change to this historic landscape has been underestimated

- Site visits to assess heritage and visual impacts were conducted in October, April and July, when vegetation was in leaf and screening was at its maximum, not in winter when worst-case impacts would be visible
- Corsham Court (Grade II*) has been scoped out of the heritage assessment despite the cable route passing within 250 metres of this designated asset

**See end note 10*

D. SAFETY

CLAIM 11: Grid-scale batteries are completely safe and the Lime Down BESS will be safely managed.

Source: *Lime Down Solar*

Reality: Grid-scale lithium-ion battery storage carries well-documented risks of thermal runaway, fire, explosion and toxic gas release. The proposed Lime Down BESS 1GWh, one of the largest in England, would be sited above a principal drinking water aquifer, next to a mainline railway, and close to Grade I listed Bradfield Manor.

- The Moss Landing facility in California (January 2025) caught fire and required evacuation over a 4-mile radius; post-fire concentrations of nickel, cobalt and manganese in nearby wetlands rose by up to an order of magnitude (Nature, 2025)
- The National Fire Chiefs Council states BESS pose 'a significant fire risk due to thermal runaway, resulting in rapid production of large volumes of toxic and explosive vapours leading to explosion and fire
- A 2025 Commons debate confirmed 'there are no laws specifically governing the safety of battery energy storage sites' the UK lacks statutory lifecycle regulation
- The entire Lime Down site sits within a Groundwater Source Protection Zone; firefighting water contaminated with battery chemicals poses a direct risk to drinking water supplies for Chippenham and Bath
- The applicant's own plume assessment was restricted to a 1km radius, the Moss Landing evacuation radius was 4 miles (6.4km); no credible worst-case scenario for a facility of this size has been modelled

**See end note 11*

E. COMMUNITY & LOCAL IMPACT

CLAIM 12: Impacts on local communities are limited and outweighed by national benefits.

Source: *IGP / industry*

Reality: Lime Down has generated 4,958 Relevant Representations, 99% objecting, the highest number ever recorded for any NSIP application in England. Despite over 400 of these raising equine welfare concerns, the applicant has not conducted a single equine-specific impact assessment.

- The bloodstock and equine sector is a defining feature of the North Wiltshire rural economy; no equine-specific assessment has been carried out despite more than 400 Relevant Representations explicitly raising equine concerns
- The applicant has itself admitted that construction will cause unmitigable significant adverse effects on at least one equestrian business yet has not applied the same assessment to other equine and bloodstock businesses in the area
- Wiltshire Council's own climate analysis indicates Lime Down would not reach carbon break-even until approximately 2076, meaning it increases net carbon emissions for over 50 years before delivering any climate benefit
- The scheme displaces twelve tenant farmers, those least able to absorb the disruption, for the benefit of nine landowners, many of whom do not farm the land themselves
- There is no provision for secured decommissioning bonds; the community has no guarantee the land will be restored, particularly given the likelihood of asset transfer or resale over a 60-year period

**See end note 12*

F. ENERGY REALITIES - NATIONAL CONTEXT

Stop Lime Down supports renewable energy delivered responsibly and in appropriate locations. The following four claims relate to national policy; they are included here because they are relevant to understanding the scale and context of proposals like Lime Down.

CLAIM 13: This solar farm could power 115,000 homes.

Source: *Island Green Power project information*

Reality: This is a peak output figure. In practice, UK solar farms generated between 10-15% of their installed capacity on average in 2024, produce zero power at night, and very little in winter. This is when electricity demand is highest.

- UK solar PV load factors fell below 10% in 2024 (DUKES 2025, GOV.UK) meaning it delivers less than one tenth of its claimed output over the year
- Solar output peaks in summer when demand is lowest; it falls to zero every night and to minimal levels throughout winter
- Continuous power to a single home requires 24/7 generation; solar cannot provide this without substantial backup from gas, nuclear or other firm sources
- Wiltshire Council's own analysis indicates Lime Down would not reach carbon break-even until approximately 2076

*See end note 13

CLAIM 14: Solar energy is cheap.

Source: *Ed Miliband, September 2024 Energy UK Conference*

Reality: Large-scale solar relies on substantial government subsidies paid by consumers through energy bills. The cost of maintaining parallel backup generation capacity to cover intermittency is not included in solar's headline price.

- Renewable electricity subsidies cost consumers approximately £25.8 billion per year (Renewable Energy Foundation analysis of Ofgem data)
- Equivalent to over £900 per household per year in current subsidies and support costs
- These figures exclude additional grid costs: transmission upgrades, constraint payments and balancing services required to manage variable output
- Wholesale gas trades at around £24/MWh; offshore wind contracts are locked in at £133/MWh, a mechanism that increases the subsidy gap as gas prices fall

*See end note 14

CLAIM 15: The UK is ideal for large-scale ground-mounted solar.

Source: *Chris Hewett, Solar Energy UK*

Reality: The UK's solar resource is significantly below the global average. Low productivity means large areas of agricultural land must be used to generate relatively modest amounts of power , a trade-off that does not arise in southern Europe, and which can be avoided by prioritising rooftops and warehouses in the UK.

- The UK ranks among the lowest tier of countries globally for solar photovoltaic potential (World Bank Global PV Potential Study)
- Typical UK solar capacity factor is around 10–15%, compared with 25–30% in Spain or Portugal, meaning the same energy requires two to three times the land area
- The government's own Rooftop Solar Action Plan acknowledges that 250,000 commercial rooftops remain available and largely unused; warehouse rooftops near the grid would deliver power without agricultural land loss
- France has tightened its agrivoltaic rules to require that ground-mounted solar on agricultural land must not significantly affect food production; the UK has no equivalent safeguard

*See end note 15

CLAIM 16: Battery storage makes large-scale solar reliable and strengthens UK energy security.

Source: *DESNZ / UK Government Net Zero Strategy*

Reality: UK battery storage systems provide only 2–4 hours of discharge at full power, not the days of backup needed for genuine energy security. The Lime Down BESS, like most UK facilities, is primarily a commercial trading asset, not an energy security asset.

- All UK BESS systems provide only hours of storage, not days; they cannot bridge multi-day periods of low wind and solar
- Batteries consume 15–30% of the electricity put into them as round-trip losses; the Lime Down scheme itself acknowledges a round-trip efficiency of 85–88%
- BESS are primarily used to buy power when grid prices are low and sell when high, a commercial arbitrage function, not an energy security function
- The Lime Down scheme has an import capacity of 250MW, meaning it would routinely draw power from the National Grid, potentially from fossil fuel generation, particularly at night
- [redacted]. This is relevant context for a 60-year infrastructure stewardship commitment

*See end note 16

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Appendix 18 - Local equine business impacts, email sent to Wiltshire Council

From: **January Farrington**[redacted]@dfarrington.com
Subject: Lime Down Solar - Impact on local businesses
Date: 19 April 2026 at 18:02
To: [redacted]@wiltshire.gov.uk
Cc: Stop Lime Down info@stoplimedown.com, Dermot Farrington [redacted]@dfarrington.com
Bcc:[redacted]@gmail.com,[redacted]@outofzim.com

JF

Dear [redacted]

I have been given your details by Stop Lime Down and understand you are preparing Wiltshire County Council's local impact report for Lime Down. I am therefore contacting you to explain the impacts this scheme presents to our business.

West Park Farm, Bundaberg Ltd, Dermot Farrington Bloodstock - SN16 0HH

Our property, West Park Farm in Corston is a thoroughbred stud farm which we operate alongside Dermot's international bloodstock business. This business invests in approximately 50–100 horses per annum, has been active for over 20 years and responsible for Group 1 winners in all major racing countries in both the Northern and Southern hemispheres.

West Park Farm is integral to these operations and accommodates a changing population of high-value horses throughout the year, including pregnant broodmares, foals, yearlings, and racehorses. We also board valuable bloodstock on behalf of overseas clients with horses regularly in transit to destinations such as Hong Kong, Australia, and the United States, as well as to sales across Europe. As an example, just earlier this week Dermot attended the OBS sales in Florida accompanying a client who spent $3,530,000 on 5 two-year-old thoroughbreds (just one made $2,300,000). Any of these horses we would expect to board on our farm in the future. This clearly demonstrate the value of the horses we manage. (https://obssales.com/catalog/#/150/results)

A core part of our business is "pinhooking" foals. These young horses typically remain on the farm for less than a year and are prepared for yearling sales. This involves daily handling, including walking them in-hand around paddocks, particularly alongside the Gauzebrook. Thoroughbreds are highly sensitive animals and are easily spooked, even within a stable environment. The introduction of a large-scale solar development, including construction activity, infrastructure, and associated noise would present a significant and unacceptable risk to the welfare of the horses and the viability of our operations and business.

Since acquiring the farm in 2018, we have made substantial investments in facilities and infrastructure. However, due to the uncertainty surrounding Lime Down and the potential impact, we have had to stop further investment. It would be irresponsible to continue operating or investing under these conditions given the level of risk and potential loss.

In terms of location:

- Our barns and stables are positioned in an elevated position overlooking Area D https://w3w.co/this.switch.continued
- Our grazing land and paddocks are used for both general management and yearling preparation and run alongside the Gauzebrook, sitting directly adjacent to the proposed panel areas.
- The proposed substation (previously identified as a second BESS) is elevated and opposite our buildings. We have not been able to find the Environmental Impact assessment for this substation within IGP's DCO application.

We feel our input into the local economy is significant. We employ three full time staff but in addition use many local subcontractors. I noted only last week we had 13 subcontractors on the farm at one point . Our part time/ full time staff totals 11 with many local businesses also benefitting. These include local farriers (£15,000 PA), local vets (£40,000 PA), international transporters (£100,000 PA), domestic and local transporters (£10,000), local feed and locally gown hay & straw (£40,000 at least PA). Our farm accountant is five miles away and all our farm equipment including tractors, trailers and quad bikes are also sourced locally. We have employed over a dozen school leavers that have had their first job on our farm and the last international client that came to stay ended up investing £5m in the UK racing industry.

We have also experienced a noticeable increase in flooding from the Gauzebrook over the past two years, which is a growing concern in itself. The implications on our staff and farm insurance will increase significantly.

We have already encountered trespassing with a monitoring device chained to our boundary fence in March 2024, prior to any notification of the Lime Down project. We believe this was to monitor sound but no permission was sought, so we requested its immediate removal. The location was: https://w3w.co/reader.pacemaker.geese

Lime Down sits across an established, very active equestrian landscape which was reflected by the 400 relevant representations specifically raising equine concerns. But despite the number of stud farms, professional yards and everyday equine use in the area, there is no equine specific assessment, businesses aren't being treated as sensitive receptors and rural riding routes are being dismissed simply because they are considered not heavily used.

As prey animals with strong flight responses, horses are neurologically adapted to react to unfamiliar noise and movement. For breeding environments, where pregnant mares, foals and valuable bloodstock are present, maintaining low-stress, stable surroundings is particularly important.

From our review, key gaps in IGP's current equine assessment include:

- No **equine-specific assessment methodology**
- Static solar panel guidance being applied to **large-scale tracking panels**
- No assessment of **movement, angle change, or shifting reflections** as behavioural stimuli
- **Noise impacts** (construction and operational) not assessed in terms of equine response
- Rural lanes and PRoWs **downgraded based on low user numbers**
- Equine businesses (including stud farms) **not treated as sensitive receptors**
- Welfare risks effectively **transferred to riders, handlers and businesses**
- Impacts considered "operationally accommodatable" without evidence

I know this area well having grown up at Ladyswood Stud in Sherston where my father trained racehorses for over 25 years and originally established it as a stud farm. Both my husband and I have worked hard within this industry, living all over the world to build our business but yet there has been no meaningful engagement from IGP. Our business, like others, has been treated as collateral damage and that's very hard to accept.

Lime Down Solar does not represent a compatible land use alongside stud farms and I hope this gives you a better understanding of the devastating impact it would have for us and many others.

Kind regards,

January Farrington

I have included below a few suggestions towards equine businesses you might considering contacting for your assessment:

- *Ladyswood Stud SN16 0LA*
- *Tomlinson Equine - http://tomlinsonequine.co.uk/*
- *B&W equine vets - Willesley*
- *Seagry Stud SN15 5EX*
- [redacted]
- [redacted] *(She has recently moved to this postcode with her original facilities, still being used located at Ann & Ashton Hawker's Hullavington Farm Buildings SN14 6UG (There as a recent IGP deadline response to her RR)*
- *West Kington Stud SN14 7JE https://www.westkingtonstud.co.uk/west-kington-stud-new-website/*
- *Beaufort Polo Club*

Appendix 19 - NESO Freedom of Information Request response Jan 2026 for Lime Down Solar Project

Public

Ref: FOI/25/203

National Energy System Operator
Faraday House
Gallows Hill
Warwick
CV34 6DA
InformationRights@neso.energy
www.neso.energy

14 January 2026

Dear requester

Request for Information

Thank you for your request for information which was received by NESO on 13 December 2025. Your request has been considered under the Environmental Information Regulations 2004 (EIR). This is because information about connection agreements relates to a measure that could affect the environment and therefore meets the definition of 'environmental information' provided at Regulation 2(1)(c) of the EIR.

Request

You asked us:

This request relates to the project that appears in NESO's Transmission Entry Capacity (TEC) Register with the following identifiers:
Customer Name: LIME DOWN SOLAR PARK LIMITED
Project Name (TEC register): Melksham
Connection Site: Melksham 400kV Substation
Project Number: PRO-001605
Project ID: a0I4L0000005iP1QAI
Plant Type (TEC register): Energy Storage System; PV Array (Photo Voltaic/solar)
Contracted TEC shown: 500 MW (effective from 2030/07/31)

Information Requested:
Please provide the information held by NESO that records, states, or evidences the following, as it applies to this project:

1. Protected status

Whether NESO has assessed/recorded this project (or any component/capacity within it) as Protected, Partially Protected, or Not Protected under the current Connections Reform / gated process arrangements; and if Partially Protected, please specify which component(s) (PV and/or BESS) and what capacity is protected.

2. Gate outcome (Gate 1 / Gate 2)
The Gate outcome NESO has assigned/recorded for this project and, if NESO holds the outcomes separately by technology or component, the Gate outcome for:
(a) the solar PV element; and
(b) the battery energy storage element (including any export-related TEC).
If NESO holds only a single Gate outcome for the overall project (not split by component), please provide that overall Gate outcome.

3. Outcome notification record
Any document(s) or record(s) that show the date NESO determined and/or communicated the Protected status and Gate outcome for this project (for example, an outcome notification letter/email).
If full disclosure is not possible, please sent a redacted copy with personal data and any strictly confidential commercial terms removed, while still showing the Protected/Gate outcome(s) and dates.

4. Phase / zonal classification used for queue outcomes
If NESO holds information showing the "phase" (e.g., Phase 1 / Phase 2) and/or the relevant zonal/area classification used for queue outcome reporting for this project (including any relevant transmission zone identifiers), please provide those recorded values.

Our response
NESO, in collaboration with the networks, industry, government and Ofgem has delivered a transformational change to the way that the grid connections process operates. Information on Connections Reform is available here:

- Connections Reform | National Energy System Operator.
- About Connections Reform | National Energy System Operator

A key part of this reform is the introduction of the new Gate 2 to Whole Queue (G2TWQ) process, which ensures that only projects that are ready to go and are aligned to the UK Government's Clean Power Action Plan progress through to the new connections delivery pipeline. The Gate 2 Criteria Methodology and Connections Network Design Methodology can be found here:

- Connections Reform design documents and methodologies.

On 8 December 2025 NESO began informing Customers of the outcome of their applications and published the results of the new connections delivery pipeline. Further detailed results data was published in January 2026:

- Connections Reform Results | National Energy System Operator.
- Connections Reform: Detailed Results Data

The published information provides a high-level view of the reformed pipeline. NESO will not be disclosing information on the status of individual projects at this time, except where it is publicly available. Further aggregated information on the new connections pipeline will be made available over the coming weeks and months.

The TEC Register is a publicly available list of projects that hold contracts for Transmission Entry Capacity (TEC) with NESO. These include existing and future connection projects and projects that can be directly connected to the National Electricity Transmission System (NETS) or make use of it.

As you are aware, there is an entry for PRO-001605 on the current TEC Register. The current TEC register shows the contracted position at the date published and does not yet show the outcome of the G2TWQ process. The TEC Register is published twice weekly, and is updated when contracts are signed or terminated, and when contractual milestones are met. If a project has been made a Gate 1 or Gate 2 offer this will be updated on the TEC Register once the Gate 1 or Gate 2 agreement has been countersigned by NESO. Until that point, the Gate 1 or Gate 2 field will remain blank.

NESO will not provide any further information relating to specific developers or their projects than that which is made publicly available. This includes any information on participation in the Connections Reform process relating to an individual project.

Regulation 12(5)(e) of the EIR states that a public authority may refuse to disclose information to the extent that its disclosure would adversely affect the confidentiality of commercial or industrial information where such confidentiality is provided by law to protect a legitimate economic interest.

Information is covered by Regulation 12(5)(e) if:

- The information is commercial or industrial in nature;
- Confidentiality is provided by law;
- The confidentiality is protecting a legitimate economic interest;

- The confidentiality would be adversely affected by disclosure.

Information relating to specific developers and projects is commercial in nature and our use of this exception is primarily in respect of the potential consequence to the developer's commercial interests.

Whilst we review each request that we receive on a case-by-case basis, you will see from the responses published on our Disclosure log | National Energy System Operator that our decision to refuse your request is consistent with our decisions on similar requests for other projects.

Commercial companies develop generation projects and are independent of NESO and the respective transmission owners. These development projects are competitive processes, both for the rights to supply electricity to the transmission network and also for funding from investors and any available government funding where applicable.

Given the competitive arena in which renewable energy projects are developed and implemented, a developer would not expect their commercial information to be published. This would, in effect, make it available to other developers.

Connection offers are made substantially in the form and under the terms of the Connection and Use of System Code (CUSC). The CUSC has exhibits containing proformas of the documents which set out the main content of the connection agreements with a developer, and you can find the CUSC and the proformas on our website: Connection and Use of System Code (CUSC) | National Energy System Operator. NESO is bound by the confidentiality obligations under the CUSC and cannot share the specific terms put in place with a developer.

NESO also falls within the scope of the Utilities Act 2000 and Section 105 of that Act makes it a criminal offence to disclose information: a) obtained under the Utilities Act 2000 and any other key energy legislation such as the Gas Act 1986 and the Electricity Act 1989, subject to specific exceptions; and b) where the information relates to the affairs of any individual or any particular business during the lifetime of the individual or so long as the business continues to be carried on.

You may find it helpful to know that this kind of confidentiality obligation is not limited to the energy sector. There are equivalent provisions in legislation governing other sectors (e.g. the Water Act 1989, the Telecommunications Act 1984, the Airports Act 1986, and the Broadcasting Act 1990). In our opinion, the information in question which is held by our Connections Team is subject to the restrictions at Section 105 of the Utilities Act and does not fall within any of the limited

exceptions to that duty of confidentiality. Beyond this, there is also a common law duty of confidentiality based on the expectations of the developers.

All exceptions in the EIR are subject to a public interest test.

NESO acknowledges that there are a number of public interest arguments in favour of disclosing the requested information. There is a public interest in renewable energy development, particularly where the construction and development of such projects may have an impact on local areas. The general public may be interested in the dates and times of construction, the connection dates, and the timelines and scope of developments.

There is a public interest in ensuring no specific developer is materially disadvantaged through disclosing confidential commercial information, which is not released in respect of other projects. This ensures that there is a level playing field across all projects.

NESO has a public duty under our licence to facilitate competition within the energy market and there is a recognised public interest in allowing competition in the energy industry. Increased renewable generation is crucial to the Government achieving its net zero and clean energy targets and anything that unjustifiably inhibits the competitive development of that renewable generation runs counter to these goals.

NESO is the designated independent system operator and planner under the Energy Act 2023 and must remain independent, fair, and consumer focused. Disclosure could erode trust within the sector, hampering NESO's role and our ability to drive forward reforms and initiatives that would bring benefits to consumers and to the environment.

Having weighed up these public interest arguments, our opinion is that the balance of the public interest lies in maintaining the exemption and withholding the information for this project. NESO is ensuring that it is being as transparent as possible through the Connection Reform process and will therefore not publish information where there would be an adverse effect on any party. The information in the TEC Register confirms where there is a project covered by an agreement. Where a project has received a Gate 1 or Gate 2 offer that information will be made available through the TEC Register once the offer is countersigned. The CUSC information outlines the substantial content of connection agreements whilst preserving the commercial confidentiality owed to the developer and ensuring that NESO meets its legal and licence obligations.

The use of the EIR exception for similar information relating to the connection of windfarms was the subject of a Decision Notice (Reference IC-127537-Q8R6) from the Information Commissioner.

Whilst we consider every request for information on a case-by-case basis, the Information Commissioner's analysis of the connections process and the application of this exemption is helpful context. This decision upheld the use of the exception by the National Grid Electricity System Operator prior to our transition to NESO. The full decision is available on the Information Commissioner's Office (ICO) website.

This concludes our response to your request.

Next steps

If you are dissatisfied with our handling of your FOI/EIR request, you can ask us to review our response. If you want us to carry out a review, please let us know within 40 working days and quote the reference number at the top of this letter. You can find our procedure here: Freedom of Information and Environmental Information Regulations | National Energy System Operator. The ICO's website also provides guidance on the internal review process: What to do if you are dissatisfied with the response | ICO.

If you are still dissatisfied after our internal review, you can complain to the Information Commissioner's Office (ICO). You should make complaints to the ICO within six weeks of receiving the outcome of an internal review. The easiest way to lodge a complaint is through their website: www.ico.org.uk/foicomplaints. Alternatively, they can be contacted at: Wycliffe House, Water Lane, Wilmslow, SK9 5AF.

Thank you for your interest in the work of the National Energy System Operator (NESO).
Regards,
The Information Rights Team, National Energy System Operator (NESO)

Appendix 20 - NESO Freedom of Information Request response Jan 2025 for IGP's East Pye Solar Project

Public

Ref: FOI/25/240

National Energy System Operator
Faraday House
Gallows Hill
Warwick
CV34 6DA
InformationRights@neso.energy
www.neso.energy

26 January 2025

Dear requester

Request for Information

Thank you for your request for information.

Your request has been considered under the Environmental Information Regulations 2004 (EIR). This is because information about connection agreements and the connections queue relates to measures that could affect the environment and therefore meets the definition of 'environmental information' provided at Regulation 2(1)(c) of the EIR.

Request

You asked us:

> *Under Freedom of Information, I would like to know whether:*
> *1. East Pye Solar has been granted a gate 2 grid connection.*
> *2. There has been any correspondence between DESNZ and NESO regarding granting gate 2 grid connections to Macquarie owned projects, and specifically East Pye Solar.*
> *3. I would like to see any correspondence on this issue between Island Green, Macquarie, NESO and DESNZ.*

Our response

We can confirm that we hold recorded information in scope of your request. Your questions relate to the East Pye Solar project which is also referenced as Long Stratton in some of our records.

Question 1

NESO, in collaboration with the networks, industry, government and Ofgem has delivered a transformational change to the way that the grid connections process operates.

Information on Connections Reform is available here:

- Connections Reform | National Energy System Operator.
- About Connections Reform | National Energy System Operator

A key part of this reform is the introduction of the new Gate 2 to Whole Queue (G2TWQ) process, which ensures that only projects that are ready to go and are aligned to the UK Government's Clean Power Action Plan progress through to the new connections delivery pipeline.

The Gate 2 Criteria Methodology and Connections Network Design Methodology can be found here:

- Connections Reform design documents and methodologies.

On 8 December 2025 NESO began informing Customers of the outcome of their applications and published the results of the new connections delivery pipeline. Further detailed results data was published in January 2026:

- Connections Reform Results | National Energy System Operator.
- Connections Reform: Detailed Results Data

The published information provides a high-level view of the reformed pipeline. NESO will not be disclosing information on the status of individual projects at this time. Further aggregated information on the new connections pipeline will be made available over the coming weeks and months.

The TEC Register is a publicly available list of projects that hold contracts for Transmission Entry Capacity (TEC) with NESO. These include existing and future connection projects and projects that can be directly connected to the National Electricity Transmission System (NETS) or make use of it.

There are three entries for Long Stratton (PRO-004868, PRO-004850, PRO-002297) on the current TEC Register. The current TEC register shows the contracted position at the date published and does not yet show the outcome of the G2TWQ process. The TEC Register is published twice weekly, and is updated when contracts are signed or terminated, and when contractual milestones are met. If a project has been made a Gate 1 or Gate 2 offer this will be updated on the TEC Register once the Gate 1 or Gate 2 agreement has been countersigned by NESO. Until that point, the field specifying Gate 1 or Gate 2 will remain blank.

There are two entries relating to projects at Long Stratton in the Existing Agreement (EA) Register. This register details all projects that applied for "Gate 2" in the Connections Reform process where the developer consented to the inclusion of a project in the EA Register. If a project does not appear on the EA Register consent may not have been given for inclusion, or the project may not have applied for “Gate 2”. The Register does not outline any outcomes or results of the connections reform process.

NESO will not provide any further information relating to specific developers or their projects other than that which is made publicly available.

Regulation 12(5)(e) of the EIR states that a public authority may refuse to disclose information to the extent that its disclosure would adversely affect the confidentiality of commercial or industrial information where such confidentiality is provided by law to protect a legitimate economic interest.

Information is covered by Regulation 12(5)(e) if:

- The information is commercial or industrial in nature;
- Confidentiality is provided by law;
- The confidentiality is protecting a legitimate economic interest;
- The confidentiality would be adversely affected by disclosure.

Information relating to specific developers and projects is commercial in nature and our use of this exception is primarily in respect of the potential consequence to the developer's commercial interests.

Whilst we review each request that we receive on a case-by-case basis, you will see from the responses published on our Disclosure log | National Energy System Operator that our decision to refuse your request is consistent with our decisions on similar requests for other projects.

Commercial companies develop generation projects and are independent of NESO and the respective transmission owners. These development projects are competitive processes, both for the rights to supply electricity to the transmission network and also for funding from investors and any available government funding where applicable.

Given the competitive arena in which renewable energy projects are developed and implemented, a developer would not expect their commercial information to be published. This would, in effect, make it available to other developers.

Connection offers are made substantially in the form and under the terms of the Connection and Use of System Code (CUSC). The CUSC has exhibits containing proformas of the documents which set out the main content of the connection agreements with a developer, and you can find the CUSC and the proformas on our website: Connection and Use of System Code (CUSC) | National Energy System Operator. NESO is bound by the confidentiality obligations under the CUSC and cannot share the specific terms put in place with a developer.

NESO also falls within the scope of the Utilities Act 2000 and Section 105 of that Act makes it a criminal offence to disclose information: a) obtained under the Utilities Act 2000 and any other key energy legislation such as the Gas Act 1986 and the Electricity Act 1989, subject to specific exceptions; and b) where the information relates to the affairs of any individual or any particular business during the lifetime of the individual or so long as the business continues to be carried on. You may find it helpful to know that this kind of confidentiality obligation is not limited to the energy sector. There are equivalent provisions in legislation governing other sectors (e.g. the Water Act 1989, the Telecommunications Act 1984, the Airports Act 1986, and the Broadcasting Act 1990). In our opinion, the information in question which is held by our Connections Team is subject to the restrictions at Section 105 of the Utilities Act and does not fall within any of the limited exceptions to that duty of confidentiality. Beyond this, there is also a common law duty of confidentiality based on the expectations of the developers.

All exceptions in the EIR are subject to a public interest test.

NESO acknowledges that there are a number of public interest arguments in favour of disclosing the requested information. There is a public interest in renewable energy development, particularly where the construction and development of such projects may have an impact on local areas. The general public may be interested in the dates and times of construction, the connection dates, and the timelines and scope of developments.

There is a public interest in ensuring no specific developer is materially disadvantaged through disclosing confidential commercial information, which is not released in respect of other projects. This ensures that there is a level playing field across all projects.

NESO has a public duty under our licence to facilitate competition within the energy market and there is a recognised public interest in allowing competition in the energy industry. Increased renewable generation is crucial to the Government achieving its net zero and clean energy targets and anything that unjustifiably inhibits the competitive development of that renewable generation runs counter to these goals.

NESO is the designated independent system operator and planner under the Energy Act 2023 and must remain independent, fair, and consumer focused. Disclosure could erode trust within the sector, hampering NESO's role and our ability to drive forward reforms and initiatives that would bring benefits to consumers and to the environment. There is a clear public interest in NESO not committing a criminal offence under the Utilities Act.

Having weighed up these public interest arguments, our opinion is that the balance of the public interest lies in maintaining the exemption and withholding the information for this project. NESO is ensuring that it is being as transparent as possible through the Connection Reform process and will therefore not publish information where there would be an adverse effect on any party. The information in the TEC Register confirms where there is a project covered by an agreement. Where a project has received a Gate 1 or Gate 2 offer that information will be made available through the TEC Register once the offer is countersigned. Where a developer has consented to the information being made publicly available, the Existing Agreements register confirms whether a project applied for Gate 2 through the G2TWQ process. The CUSC information outlines the substantial content of connection agreements whilst preserving the commercial confidentiality owed to the developer and ensuring that NESO meets its legal and licence obligations. Projects are also subject to planning processes during which relevant information would be published.

The use of the EIR exception for similar information relating to the connection of windfarms was the subject of a Decision Notice (Reference IC-127537-Q8R6) from the Information Commissioner. Whilst we consider every request for information on a case-by-case basis, the Information Commissioner's analysis of the connections process and the application of this exemption is helpful context. This decision upheld the use of the exception by the National Grid Electricity System Operator prior to our transition to NESO. The full decision is available on the Information Commissioner's Office (ICO) website.

Questions 2 and 3

In terms of the second part of your request relating to correspondence, we have undertaken a series of centralised searches of our email system for correspondence with the parties that you listed, and with the keywords "East Pye" and "Long Stratton". In addition we have searched the emails of key leaders and managers within NESO who were involved in communications with connections customers in relation to the queue reform process. Most of the correspondence relating to this project and others from the same developer and/or investor relates to routine customer account and contract matters that fall outside the scope of your request. Routine correspondence relating to connections applications and agreements is with the developer only. Our systems only record the details of the developer who makes the application and who enters

into a connection agreement. We do not record the details of investors or shareholders on our systems.

There are three emails that fall within the scope of your request:

1. Email from Island Green Power to NESO and National Grid dated 25 September 2025 at 18:49. This email relates to updates from the developer on the progress of planning submissions for their projects.
2. Email thread between Macquarie, NESO and DESNZ in January 2025 relating to a meeting on Monday 27 January 2025. This email thread included an attached document which had been created by Island Green Power.
3. Email thread between Island Green and NESO that includes questions and comments about the connections reform process, also from January 2025. This does not reference the specific project in your request.

We are providing a copy of the email thread between Macquarie, NESO and DESNZ with personal names and contact details redacted in accordance with the EIR exception for personal data at Regulation 13 of the EIR. We are able to do so because in this instance we have contacted Macquarie and Island Green Power and received their consent to share the emails. We have removed the IGP attachment and one sentence from the email and are withholding the other email from IGP to NESO and National Grid and the third email thread between Island Green Power and NESO under the exception at Section 12(5)(e) of the EIR.

The information in the correspondence with Island Green Power and in the attachment relates to specific projects and is of a commercial nature. Again, our use of this exception is primarily in respect of the potential consequence to the developer's commercial interests which are covered by confidentiality obligations in the CUSC and under Section 105 of the Utilities Act. NESO has no specific consent from the developer to make public their commercial information.

We understand that local communities close to where projects are being considered or developed have a clear interest in understanding more about specific projects and the decision-making process and that there is a wider public interest in understanding how projects are developed and approved and how renewable energy infrastructure is used and sited.

Disclosure is likely to harm the relationship between NESO and connections customers and would reduce trust in NESO more widely in the energy sector. If suppliers of information are concerned about the disclosure of confidential information, such that they are unwilling to provide information in the future, this would have a detrimental effect on NESO's ability to carry out our role in delivering our licensed activities.

As the designated independent system operator and planner under the Energy Act 2023 NESO must remain independent, fair, and consumer focused. Disclosure could erode trust within the sector, hampering NESO's role and our ability to drive forward reforms and initiatives that would bring benefits to consumers and to the environment.

The confidentiality obligations in Section 105 of the Utilities Act make it an offence for us to disclose information provided to us by a developer and it is not in the public interest for public corporations to breach statutory confidentiality obligations. On the basis of this obligation and the public interest arguments set out above, we believe that the balance of the public interest supports the use of the exception.

This concludes our response to your request.

Next steps

If you are dissatisfied with our handling of your FOI/EIR request, you can ask us to review our response. If you want us to carry out a review, please let us know within 40 working days and quote the reference number at the top of this letter. You can find our procedure here: Freedom of Information and Environmental Information Regulations | National Energy System Operator. The ICO's website also provides guidance on the internal review process: What to do if you are dissatisfied with the response | ICO.

If you are still dissatisfied after our internal review, you can complain to the Information Commissioner's Office (ICO). You should make complaints to the ICO within six weeks of receiving the outcome of an internal review. The easiest way to lodge a complaint is through their website: www.ico.org.uk/foicomplaints. Alternatively, they can be contacted at: Wycliffe House, Water Lane, Wilmslow, SK9 5AF.

Thank you for your interest in the work of the National Energy System Operator (NESO).

Regards,
The Information Rights Team, National Energy System Operator (NESO)

From: [redacted]
To:
Cc:
Subject:
Date:
Attachments:

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe. If you suspect this email is malicious, please use the 'Report Phish' button.

H[redacted]

[redacted] this late; however, we have worked with IGP on a presentation for tomorrow and believe a good way to navigate this discussion is to go through some specific projects in Zones T4-T8. We will be joined [redacted] who was on the previous call we had with DESNZ.

To do this we will walk through the following projects and the presentation attached live in the room.

Zone	Project Name	Customer Name	Grid Capacity (MW)	Connection Dates
T4	Monk Fryston (Light Valley Solar)	IGP Solar 18 Limited	500	Dec.30
T4	Thornton	IGP Solar 19 Limited	500	Oct.31
T5	Feckenham	IGP Solar 14 Limited	500	Jul.31
T5	Ironbridge	IGP Solar 16 Limited	600	Apr.31
T5	Rugeley	IGP Solar 17 Limited	600	Aug.31
T6	Grendon Solar & Bess (Green Hill)	Green Hill Solar Farm Limited	500	Oct.29
T6	The Droves	IGP International prospecting	500	Oct.33
T7	Long Stratton PV & Bess Station (East Pye)	IGP International prospecting	500	Oct.31
T8	Melksham (Lime Down)	Lime Down Solar Project Limited	500	Jul.30

[redacted]rds,

[redacted]AM)

[redacted]

H[redacted]

Good to e-meet you.

[redacted]12GWs (7.2GW solar and 4.8GW BES[redacted]

We look forward to meeting you on Monday.

[redacted]

External Communication

OFFICIAL

This looks great thank[redacted]

As mentioned previously can you confirm the projects in advance?

Best,

[redacted]

Sent from Outlook for iOS

OFFICIAL

[redacted]

De[redacted]

We look forward to our meeting on Monday at 11am, thank you all again for dedicating the time for chatting to us.

[redacted] you're coming in person, please bring an ID, a [redacted] send you a Zoom link separately that you can use.

In person attendees from our side will [redacted]m Macquarie Asset Management Green Investments team (MAM GI), a [redacted]m the Government Affairs team.

In terms of the agenda for the meeting, we would propose the following rough structure:

- Introductions, Macquarie Group UK footprint and investment commitment, impacted portfolio companies
- MAM GI's understanding of the grid reform and latest guidance
  - Q&A discussion with NESO/DESNZ on any clarification points
- Deep dive into 3 case studies / assets of Island Green Power
  - More micro detail analysis of impact, planned projects and risks
  - Sense-checking of NESO's / DESNZ's thinking
- Next steps and any final Q&As

Please let me know if you have any questions, have a great weekend when it comes and see you on Monday.

[redacted]

Macquarie logo

[redacted] Ropemaker Street, London EC2Y 9HD
[redacted] www.macquarie.com

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Appendix 21 - Correspondence between IGP and NESO for grid connection for Lime Down Solar Project

[redacted]

Subject: FW: [EXTERNAL] Call Follow On

H[redacted]

[redacted]assed on your email below to me.

I have set out responses to your questions below. Please note that in future, as we move into implementation phase, we will only be responding to questions submitted via the connections Portal, under the standard arrangements.

1. Could these projects be "designated" as aligne[redacted]

We have set out the designation criteria in our designated projects methodology (neso.energy/document/350246/download)[redacted]

(critical to security of supply), 2 (critical to system operation), or 3 (materially reduce system constraints) we will only accept developer applications in response to a Notice we publish. We will work with relevant teams within NESO responsible for determining any such Notice to establish when any such Notice may be published and what specific services it would seek. We don't currently expect any such Notice to be published before Gate 2 to whole queue however given that the impact of Gate 2 to whole queue will determine where we require such services in the future.

2. Do you think there is any scope for the technology caps to be increased in the various transmission zones (aside from via the transfers) [We have done some rough work – as below - and think tweaks would negate this concern and probably have minimal impact on your side]

The only routes for permitted capacities to be changed (before SSEP) would be for Govt to reopen the CP30 Plan and increase capacities and/or for NESO to protect more categories of projects that exceed the CP30 plan permitted capacities. With regards CP30, this is a matter for Government; however, NESO is not currently advising on the need for changes. In terms of protections via the connections process, we consider that we have the right balance via the 'protections' and via the 'substitutions' we're allowing (eg oversupplied tx solar could sub in for undersupplied dx solar in the same/adjacent zone). We can't increase the amount of protections further without resulting in a more material deviation from CP30 and we don't think there are other categories of protection that would be targeted or justifiable.

3. There are allot of projects on distribution that have high costs / huge reinforcement and large curtailment. We are concerned that if we are relying on a transfer from D to T this could mess it up. I wanted to see how these transfers will be allocated / what consideration will be given to these curtailed offers.

Assuming that by 'transfers' you are referring to the concepts of zonal rebalancing and zonal substitution (CNDM Sections 5.14 and 5.16): This will be decided based on revised queue position (which takes into account planning status); i.e. the next project in the queue in an oversupplied zone will be allowed into the relevant technology 'pot' to account for a shortfall of projects in another, undersupplied zone. This is subject to meeting several criteria, including the need to not have a significantly worse impact on constraints.

Please also refer to CNDM Section 5.7 (and Sections 5.7.5 and 5.7.6 following this) regarding 'Step 5'. This step will allow DNOs to identify cases where projects definitively cannot be advanced due to network limitations (e.g. sole use works cannot also be advanced), and adjust their Phase allocation accordingly, if required.

Finally, firm connection dates (rather than non-firm) will be used when allocating projects to phases, and so if a distribution project has restrictions meaning that its firm date is much later than it's non-firm, then this will be taken into account. While advancement of this firm date can be requested, 'Step 5' means that the DNOs will triage this.

4. How are INDO's considered in all of this.

We assume you are referring to IDNOs? If so, please see Sections 8.6, 8.7 and 8.10 of the Gate 2 Criteria Methodology which outline which checks will be conducted by Transmission Connected IDNOs, and which will be conducted by NESO.

In the context of queue formation, Transmission Connected IDNOs will share with NESO all the projects they deem to have passed the Initial Gate 2 Readiness checks, and highlight any that meet the criteria for 'protections'. NESO will then add these projects to the relevant distribution zonal sub-queues, once the relevant DNO has shared their provisional sub-queue with NESO. Substitutions and rebalancing will be considered at this stage.

Distribution-connected IDNOs count as DNOs from our perspective, ie the IDNO would liaise with the local DNO and the local DNO would submit all relevant ready projects to NESO. We would assess those under Gate 2 in the same way as any other DNO projects.

Kind regards

[redacted]
Engineering and Customer Solutions
NESO
National Energy System Operator
[redacted]arwick Technology Park, Gallows Hill, Warwick, CV34 6DA

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To
Subject: [EXTERNAL] call follow on

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H

It was nice to speak.

We note that there are potential transfers from others zones / from D to T and visa versa.

However, we wanted to see.

1. Could these projects be "designated" as aligne
2. Do you think there is any scope for the technology caps to be increased in the various transmission zones (aside from via the transfers) [We have done some rough work – as below - and think tweaks would negate this concern and probably have minimal impact on your side]

3. There are allot of projects on distribution that have high costs / huge reinforcement and large curtailment. We are concerned that if we are relying on a transfer from D to T this could mess it up. I wanted to see how these transfers will be allocated / what consideration will be given to these curtailed offers.

4. How are INDO's considered in all of this.

I know this is all new (for you and us). We have spoken to Misson Control about this and their message is please bring this to our attention as we don't want real projects to lose or investors to pause investments.

Perhaps we can do a quick call to discuss, and I am aware we might not have clear answers at this point but it would be good to chat.

[redacted]

Impact of Zonal Limits on Real Projects

The implementation of zonal limits under the Clean Power 2030 (CP30) plan can significantly affect ongoing and planned projects.

Here are the main impacts:

a) Grandfathered Projects or Those with Planning by May 2025

- **Grandfathering**: Projects with planning approval by May 2025 are likely to be grandfathered, exempting them from new zonal limits.
- **Flexibility**: In areas like East Anglia, one existing project that built already exceeds the limit. There will have to be flexibility to accommodate this.

b) Projects Progressing Through NSIP Planning

- **Investment at Risk**: Projects in the Nationally Significant Infrastructure Project (NSIP) planning process have invested substantial sums (£2-3 million, up to £10 million if close to decision). These projects are at risk of being affected by the CP30 plan.

c) Overview of CP30 Limits

- **T4 Zone**:
    - **Pre-2030 Target**: 1.2GW (adequate)
    - **Post-2030 Target**: 1.7GW **(not adequate)** (known schemes: 2.4GW, with more in the pipeline)
- **T5 Zone**:
    - **Pre-2030 Target**: 4GW **(not adequate)** (built: 2.1GW, grandfathered and pending: 3.5GW, in process: 2.3GW; total: 7.9GW)
    - **Post-2030**: Additional 1.7GW **(not adequate)** of real projects, with huge potential for more therefore this will easily be exceeded with real project that have been starting the planning process with scoping and going public.
- **T7 Zone**:
    - **Pre-2030 Target**: 0.1GW **(not adequate)** (built: 0.1GW, grandfathered: 0.5GW)

    - **Post-2035**: 0.9GW **(not adequate)** (known schemes: 1.3GW, with a large TEC pipeline)
- **T8 Zone**:
    - **Pre-2030 Target**: 1.1GW **(not adequate)** (built: 0GW, grandfathered: 0GW, real projects 1.5GW)
    - **Post-2035**: 1.3 GW **(not adequate)** (health que of project behind the 2030 projects)

Solution

Our thought on ways to help improve the accuracy of the data is two do the following steps.

1. Clearly identify which projects are in which zone, ideally assign these to the TEC register so that the community can understand where they are and clearly what projects are in which zones

1. Then complete a review with each developer and understand what's real. This can be evidence through; spend to date, preparation of planning documents (scoping, Pins notice, actual applications), publicity (non-state consultation, websites, local events) and programme and procurement progress.

Or more simply increase the limits in each zone so real projects don't get stranded.

After this, it will be clearer on what is real, and where there is an opportunity to deliver CP30 targets.

DNO selected examples from applications made o[redacted]chemes that where Transmission

[redacted]

Example Project: 0.5GW Solar and BESS Project (Co-located)

- **Progress**: Moving into NSIP planning next year, approaching design freeze, with significant investment already made.
- **Transmission Offer**:
    - Connecti[redacted]
    - Grid Cost[redacted]
    - Customer[redacted]
    - Total Esti[redacted]
    - Connection Point: On site (secured)
- **Distribution Offer**:
    - [redacted]
    - reinforcement on the transmission network

This will result in an additional [redacted] CAPEX which will result in higher electricity prices.

Equally in most cases these projects will not be able to be accommodated on the distribution network without reinforcement therefore. The DNO indicated they would act as an intermediary with the Transmission Operator and the National Energy System Operator (NESO), resubmitting all connection information, which would incur additional costs. The net result of all this will be more work, more costs and less chance of getting to 2030.



[redacted]

Thank[redacted]ared some of the attached with us last week (eg their view on miscategorisation of built solar) but not the bits on there being less undersupply than expected at dx level[redacted]NESO) to be aware of the attached. We'll [redacted] at this and form a view. My initial view, but not based on any analysis, aligns with you [redacted]t they might be including microgeneration.

In terms of the miscategorisation, the main point to make is that we didn't use the connections impact assessment data as the sole input into the CP30 advice – our CP30 advice was based on wider sources of data, including from DNOs. We had also a[redacted]y checked the data tha[redacted] last week against the specifi[redacted]iscategorisation' poi[redacted]nts were already factored into the analysis we shared with you last week around 2030 figures being fairly well aligned, but with the divergence between tx and dx solar in the 2031-35 period

We therefore made the following points t[redacted]our meeting on Thursday:

- th[redacted]bservations are correct in that in our connections reform Impact Assessment we have miscategorised[redacted]s solar. There will probably be other hybrids that are also miscategorised as solar when they are in fact batteries (as we assumed that all hybrid/batteries are solar, as we don't have the precise final breakdown of hybrid allocation data yet from developers - most developers just say that they are the maximum export and import capacity for all hybrids)
- we've not checked whethe[redacted]s data on what has / hasn't submitted planning consent is correct, but it's possible that their data is more accurate, as ours is taken from some consultancy work in the summer of 2024,
- Given that our connections impact assessment data was based on developers responding to the RFI last summer and based on the report we outsourced to the consultants on planning consent status last summer, and given that we didn't independently quality assure that data, it was inevitable that the data wouldn't be completely correct. We have acknowledged that in several places publicly in our connections impact assessment, from which Ofgem drew their data
- So yes, in our connections Impact Assessment (and therefore also in Ofgem's) we may have overestimated the amount of 'ready', 'in planning' or 'built' solar in the instances highlighted b[redacted]d we may well have underestimated or overestimated those amou[redacted]r zones and/or in other technologies.

- **However, importantly – the connections impact assessment data is not the same data source that was used to set the CP30 figures.** We used other, wider sources of data for the CP30 analysis.
- **Finally, we won't use the connections impact assessment data to determine which projects are allocated spots in the new queue.** We'll do that via data we collect specifically for the Gate 2 to whole queue process, which allows us to compel developers to share full data on breakdowns of hybrids for example. We are also doing a bottom up cleanse of 'connected / built' capacity to ensure that is fully up to date by the time G22WQ opens

[redacted]

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H[redacted]

Forwarding[redacted] latest correspondence with Minister Shanks. I understand you met with them this week so you may have already seen/heard a lot of this, but forwarding in case you haven't. Appreciate there is a LOT on, so if you have limited capacity then please prioritise responding to[redacted]ueries rather than this, but we should be aware that Ministers will ask abou[redacted]eries, given the volume of emails they send them.

They are contending that the solar Dx pipeline is actually over-supplied (rather than under-supplied), based on analysis from DNO embedded capacity registers. I wonder if it might be because they are looking at DNO embedded capacity registers which includes microgeneration projects at Dx level, which isn't included for connections reform, but might be skewing the data artificially high?

They also seem very concerned that NESO/Ofgem data suggests there'[redacted] built/connected solar in [redacted]where they say there is zero. I understand th[redacted] issue is a bit of a red herring which has been sorted, but sti[redacted]uite a big discrepancy between what NESO think is built/connected and[redacted]o would be good to clarify this.

Have a great weekend.

Thanks,

[redacted]

OFFICIAL

[redacted]

Hi all,

Just forwardin[redacted] latest email, this time to Minister Shanks setting out their views on mistakes in Ofgem's minded-to decisions. I've not read this yet but views welcome. Some will have already received this but just trying to make sure everyone is sighted because copy lists are pretty random!

Thanks,

[redacted]

OFFICIAL

FYI

Department for Energy Security & Net Zero

[redacted]

[redacted]

H[redacted]

Here is the latest solar analysis from [redacted] They have attempted a whole-of-market assessment to identify gaps in NESO data and give an overall picture. They have a strong pipeline of T and D solar projects themselves, so their view on the cost and viability of each is credible.

They are concerned that T/D substitution will not solve the T problem, and we will therefore lose substantial viable T solar capacity.

Many thanks,

[redacted]

Department for Energy Security & Net Zero

[redacted]

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[redacted] letter to Minister Shanks

OFFICIAL

Good evening

In the recent attached letter to the Minister fron[redacted]ve committed to sharing with you further analysis i[redacted] Power Action Plan.

We also note Ofgem's minded-to decisions published earlier this month and have now analysed these documents. Please see our comments and analysis attached (T-solar analysis).

In particular, we note that Ofgem states that NESO is reassessing the transmission/distribution split for solar. **Our recommendation is for DESNZ to increase the T-solar 2035 cap by 30 GW, and to decrease the D-solar cap by 15 GW.**

We have also analysed Ofgem's TMO4+ Data Impact Assessment, which is based on data provided by NESO. We note major discrepancies between the NESO/Ofgem data and our internal data for T-solar, which is surprising given that there are only a small number of T-solar projects that have submitted or achieved planning. As set out in detail in the attached, we believe that NESO/Ofgem data contains errors including:

- Counting t[redacted]ower station (which includes solar on its grid connect[redacted]olar farm;
- Counting solar DCO projects that have submitt[redacted]notification to PINS of a potential future application as "planning submitted"; and
- Counting hybrid sites (e.g. battery and solar) that have submitted planning for battery only as having submitted planning for solar as well.

For awareness e have also shared this analysis with Mission Control and the Connections team in DESNZ.

We're keen to ensure that DESNZ, Ofgem, and NESO have the best possible data when considering whether and how to rebalance the solar caps between distribution and transmission, which we would be happy to discuss further if helpful.

Please note that some of this data is potentially commercially sensitive.

Kind regards

[redacted]

[redacted]

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From: Shanks, Minister (Energy Security) [redacted]
Sent: 23 January 2025 16:53
[redacted] anks

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Thank[redacted] confirming receipt.

Best,

[redacted]

Department for Energy Security & Net Zero

[redacted]

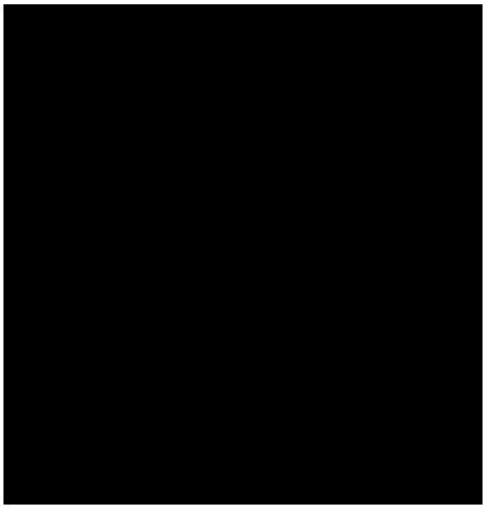
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From [redacted]
Sent: 23 January 2025 12:22
To: Shanks, Minister (Energy Security) [redacted]
Subject [redacted] low up letter to Minister Shanks

Good afternoon

Following our meeting on Monday 20 January with Minister Shanks, please see the attached follow-up letter fro[redacted]

Kind regards



[redacted] **Transmission Solar analysis 20/02/2025**

OK to share within DESNZ, Ofgem and NESO.

Note: Includes some potentially-commercially sensitive information.

Conta [redacted]

Comments on Ofgem minded-to decisions:

1. Ofgem notes that there are potentially big problems with the alignment of the solar caps with the queue of advanced D/T solar projects.
    a. We agree with this. However, we note that Ofgem's impact assessment (based on NESO's data) for T-solar appears to have clear errors (see Charts 1 and 2 below).
    b. NESO/Ofgem data appears to consider that DCO projects that have submitted a pre-application notification to PINS have "submitted planning". This is incorrect and results in an overestimate of planning submitted solar that will be kicked out of the queue.
    c. That said, there are still examples where T-solar that has submitted a DCO planning application could be kicked out of the queue (per my last email).
    d. NESO/Ofgem data also states that there is 2 GW of connected transmission solar in zone T5. This would represent 40% of the 2035 cap (5,200 MW) in the transmission zone with extremely material. We believe that this is in fact [redacted] wer station, which include [redacted] ister), but has not installe
2. Ofgem expects that the problems can be solved via rebalancing of capacit (which Ofgem believes is undersubscribed) and T-solar (which Ofgem believes is oversubscribed).
    a. We think that Ofgem is being overly confident that D-solar will be materially undersubscribed (given that the bar to being in the new queue is only land rights).
    b. Our analysis (Table 1) shows that the three southern DNOs (majority of the solar capacity in the DESNZ CPAP caps) will only be undersubscribed if less than ~85% of their accepted solar capacity has land rights secured.
    c. It appears to us that the percentages required across those 3 DNOs for 2030 and 2035 have been roughly aligned by DESNZ across DNOs (in a way that they weren't in the original NESO CP30 Advice). It does not appear to have been done through a technical evaluation of what is possible/feasible.
    d. We believe that the vast majority of DNO solar projects will have at least secured land rights. Many of these projects have been in the grid queues for many years, and have been held up by grid delays.
    e. This means it's possible that there will be little-to-no rebalancing between distribution and transmission.
    f. Therefore, to avoid advanced T-solar being kicked out of the queue (e.g. in Zone T5) and effectively being replaced with less advanced (and less feasible) DNO projects, DESNZ therefore needs to raise the T-solar caps.
3. If D-solar is not undersubscribed (based on land rights), then we believe the queue will be full of expensive and/or undeliverable DNO solar projects, which will increase CfD prices and therefore energy bills:
    a. DESNZ 's Clean Power Action Plan allows up to 52 GW of solar projects to connect to the distribution networks by 2035, but just 17 GW of T-solar.
    b. We, and many other solar developers, do not believe that this 52 GW of D-solar is realistic due to the increasing need for distribution network upgrades (which raise solar costs) and curtailment (which lowers solar revenue, raising CfD prices).

c. We also do not believe that NESO has undertaken any modelling of the distribution



accepted in 2022 or later. We can therefore use our earlier-stage projects as a proxy for the makeup of DNO queues from 2022 onwards.

j. This suggests that, while the reform process may see a large capacit[redacted]s go into Gate 2, these will not be economically feasible unless there i[redacted] uplift in corresponding CfD price and/or other route to market'.

k. We are happy to share detailed analysis of our pipeline and previously-received grid offers with DESNZ on a confidential basis.

l. We do not see similar cost increases for T-Solar as it can bypass constraints and costs on the distribution networks.

m. However, under current plans, these cheaper T-Solar projects are likely to be kicked out of the grid queue and prevented from competing with D-Solar projects in CfD auctions.

4. Ofgem flags that NESO is considering rebalancing solar between D and T.
    a. We believe this is essential. However, we don't believe that NESO can rebalance the numbers themselves.
    b. We believe that it will be necessary for DESNZ to republish the Connections Reform Annex of the Clean Power Action Plan (as NESO is just applying targets published by DESNZ as caps in the reformed grid connections process).

When reassessing the cap for T-solar, we urge DESNZ to raise the T-solar cap by 30 GW without reducing D-solar by the same amount (e.g. increase T-solar by 30 GW, but only decrease D-solar by 15 GW).

1. In the worst case scenario, huge volumes of unaffordable and/or undeliverable D-connecting solar will pass Gate 2, blocking viable T-solar projects.
2. It would take several years for the D-solar projects that pass Gate 2 to be kicked out of the queue, leaving DESNZ will little option but to pay very high CfD prices to make those projects viable, or to miss DESNZ's solar deployment target.
3. NESO may be correct that D-solar will continue to be affordable – but this is not the view of the largest and most experienced solar developers. In case NESO is wrong, it's prudent for the Government to have a supply of T-solar projects to fill the gap.
4. In this context, we believe that DESNZ should raise the T-solar cap to allow for competition between T-solar and D-solar.

We also urge the Government to raise the T-solar caps across a broad range of southern zones (T7-T11), not just in Lincolnshire (T5 and T6):

- Ofgem and NESO's data shows that zones T5 and T6 are the most oversubscribed.
- As raised above, it is essential that the Government increases the caps in T5 and T6 so that no advanced solar DCO projects (including those that have submitted a DCO planning application) are kicked out of the grid queue.
- However, there are many T-solar projects in other zones further south (T7-T11) that are at a similar stage of development (land secured, either not public or in the early stages of planning).
- These southern T-solar projects have many benefits:
    - Some of the cheapest due to higher irradiation;
    - Closest to demand, reducing new network build;
    - [redacted]
    - brings problems in planning (cumulative impact), as well as causing grid constraints.
- Many T-solar projects in T7-T11 are at a slightly earlier stage of development than projects in T5-T6. This is because the prospect of a change of Government (and therefore a more permissive planning regime) was one of the big drivers for developers now seeking projects further south, where planning is typically tougher to secure due to higher population density.
- **We recommend that the Government increases the T-solar caps in zones T7, T8, T9 and T11 by 5 GW each (20 GW total – no potential for large-scale solar in T10), with an extra 10 GW spread across northern zones (T3-T6) including those in Lincolnshire.**

Finally, we note that the 70 GW cap on solar for 2035[1] in the Clean Power Action Plan is much lower than comparable countries in Northern Europe.

1. For example, the UK 2035 cap of 70 GW is:
    a. One-third less than the Netherlands' installed capacity today on a per capita basis[2].
    a. Only ~40% of Germany's target for 2030 on a per capita basis.[3]
2. Even accounting for rooftop solar (which is excluded from the 2035 cap), the UK's solar cap is clearly far below its neighbours' current and future ambitions and is inconsistent with continued falls in the price of solar and batteries (with batteries enabling more solar deployment).
3. **If DESNZ follows our recommendation to increase the T-solar cap by 30 GW, and to decrease the D-solar by 15 GW, then the GB-wide 2035 solar cap would be 85 GW. This is still lower than the Netherlands installed capacity today on a per capita basis.**

[1] UK 2035 solar cap = 70 GW. UK population = 68.4m. i.e. 1 GW per million.
[2] NL installed capacity (June 2024) = 26 GW. NL population = 18 million. i.e. ~1.5 GW per million.
[3] Germany 2030 solar target = 215 GW. Germany population = 85 million. i.e. 2.5 GW per million population.

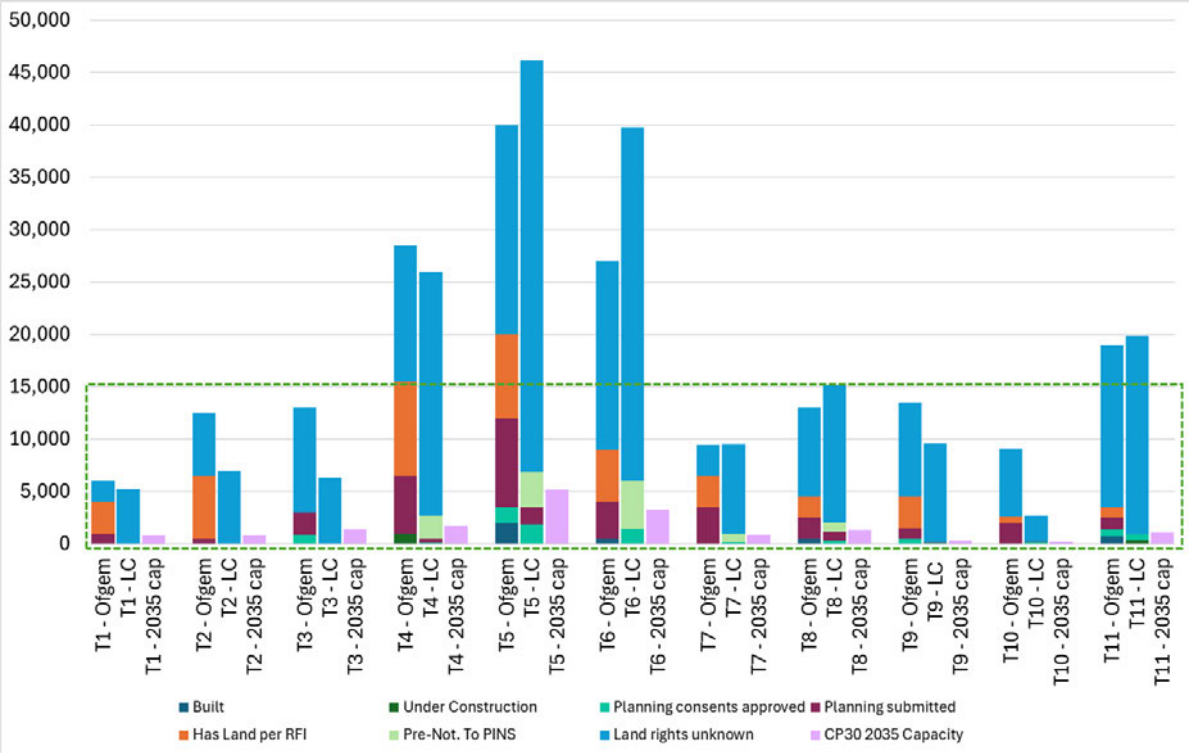
Table 1 [redacted]alysis of distribution solar queues for the major solar DNOs (based on DNO Embedded Capacity Registers (ECRs)).

Item	UKPN	NGED	SEPD
Connected	2,183	4,344	1,683
Accepted	10,906	18,060	5,425
2030 Cap	8,100	13,900	4,600
2035 Cap	11,800	19,900	6,200
Remaining (for 2030)*	- 4,989	- 8,504	- 2,508
% of queue permitted for 2030**	54%	53%	54%
Remaining (for 2035)*	- 1,289	- 2,504	- 908
% of queue permitted for 2035**	88%	86%	83%

*Remaining = Cap minus Connected minus Accepted.

**% of queue permitted = (Cap minus Connected) / Accepted.

Chart 1: Comparison betwe [redacted] nternal data and Ofgem's comparison of T-solar queue to the CPAP capacity targets

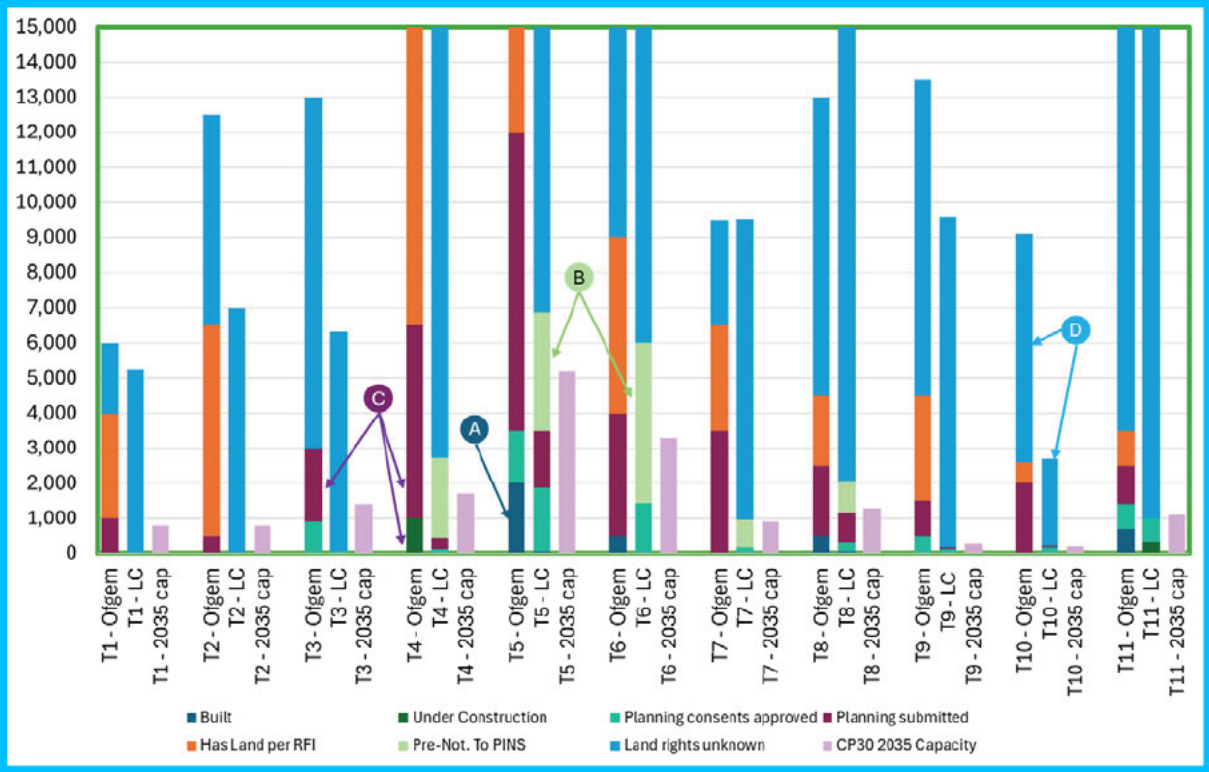


Notes:

- Ofgem's original chart is on page 111 of Ofgem's TMO4+ Data Impact Assessment, published 14 February 2025.[4]
- Ofgem states that its data is based on data supplied by NESO.
- [redacted] box is shown zoomed into in Chart 2.
- [redacted] ime green colour "Pre-Not. To PINS" is for solar DCO projects that have issued a [redacted] n to PINS that they intend to submit a DCO planning application, but those [redacted] ave not been submitted. The list of pre-notifications is published by PINS.[5]
- [redacted] ata does not include projects that have "submitted land per RFI", as this is a NESO
- To reproduce the Ofgem dat [redacted] manually read off the chart in the Ofgem pdf, which may introduce some

[4] https://www.ofgem.gov.uk/sites/default/files/2025-02/TMO4%2B%20Impact%20Assessment.pdf
[5] https://www.linkedin.com/posts/planning-inspectorate_nsip-snapshot-february-2025-activity-7292231887408824321-f7ps

Chart 2: Zoomed in version of Chart 1, wit[redacted] notes on where we believe the discrepancies arise.



Notes:

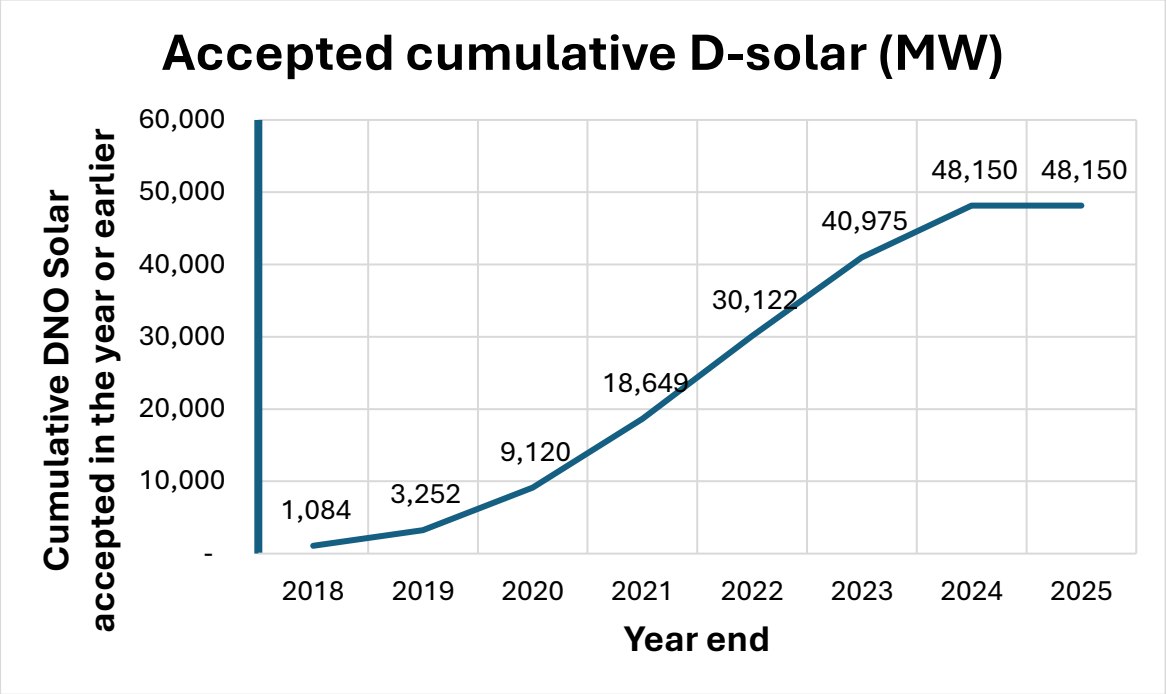
A. NESO/Ofgem data shows several zones with significant T-solar projects already connected.
   a. We believe this is incorrect, as the only large (>100 MW) T-solar farm that may have connected in Great Britain is Cleve Hill (zone T11), which we have as under construction.
   b. In the case of T5, NESO/Ofgem data shows 2 GW of connected transmission solar. This would represent 40% of the 2035 cap (5,200 MW) in the transmission zone wit[redacted] believe that this is in fact th[redacted] lar in its grid connection ag[redacted] r farm. Our analysis manually remov[redacted]

B. In m[redacted] e T solar projects as "planning submitted", when in fact those projects are at the pre-application stage, and have submitted a pre-notification to PINS that they intend to submit a DCO application at a later date. Many of these projects are aiming to submit before end-May 2025 to count as "planning submitted" in the Gate 2 to Whole Queue windo[redacted]

C. In many zones, NESO/Ofgem data shows planning submitted T solar projects th[redacted] identify either on the PINS website or via our internal databases and knowledge
   a. We believe that these may be hybrid projects that include solar in their grid connection agreement (e.g. battery plus solar), but which have only submitted a planning application for the battery element. For example, we are not aware of 1 GW of T solar being under construction in Zone T4. But it is very possible that 1 GW of T batteries is under construction in that zone.
   b. If DESNZ has access to the underlying data, then this would be easy to check on the planning portals – noting that a project that has submitted planning under the Town and Country Planning Act (TCPA) can include a maximum of 49.9 MW of solar (else it[redacted]

D. In some zones, NESO/Ofgem data shows a much larger total queue tha[redacted] understand where this discrepancy arises, as we are taking our data fro[redacted] register. It is possible that NESO has a more up-to-date dataset that includes in-flight applications.

Chart 3: Year of D-solar offer accepted (cumulative)



[redacted]nalysis of DNO Embedded Capacity Registers (ECRs). Shows the year in which D-current queue were accepted.

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EXTRACT

Draft

Connections Reform Alignment session

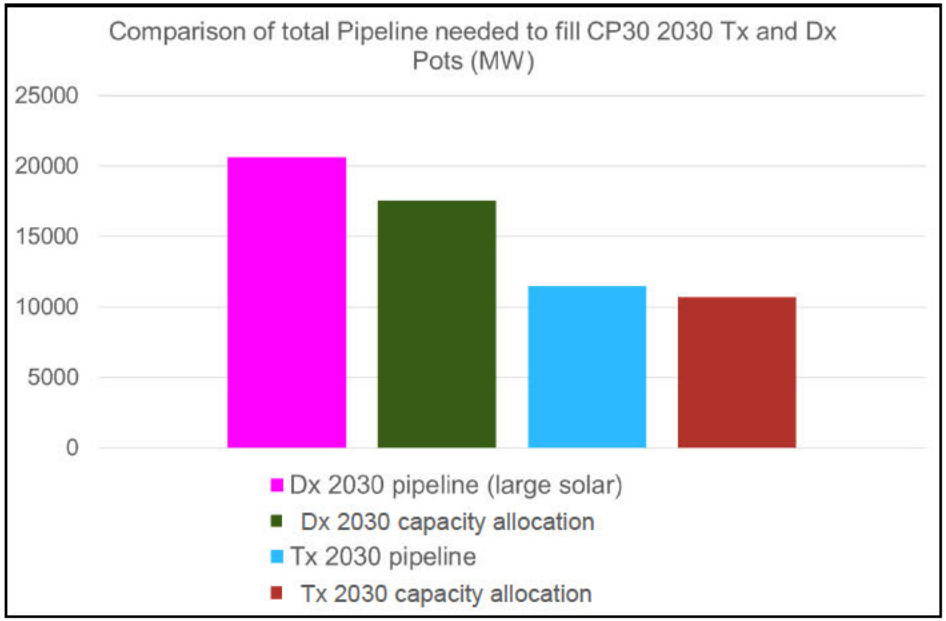
13th February 2025

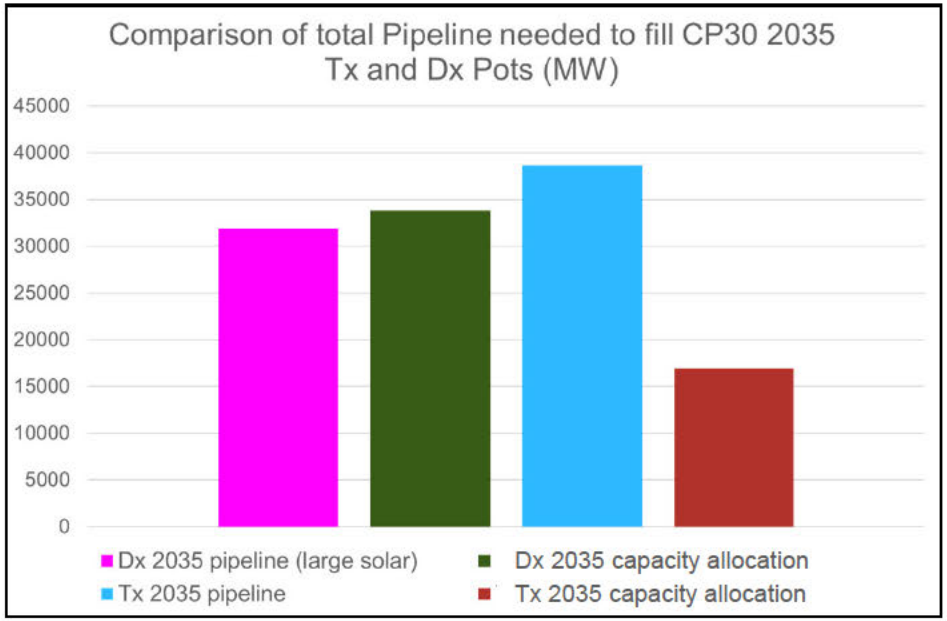
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Analysis of solar pipeline and capacity for CP2030





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CP2030 permitted capacity

Context

- NESO provided advice to the Government to support the regional capacity breakdowns that were included in the Clean Power 2030 Action Plan for Solar, Onshore Wind and Batteries for 2030 and 2035.
- The 2030 capacity breakdowns included a bottom-up assessment of the current pipeline and used information from the RFI conducted by NESO in June 2024 as well as information on capacity in the queue received from DNOs as part of the CP30 engagement process.
- This process informed the Tx / Dx split as well as the spatial allocation that has been published in the Connections Reform annex in the Government's Clean Power 2030 Action Plan.
- The 2035 Tx / Dx capacity split that was provided to the Government was based on the Holistic Transition net zero pathway from FES 2024 – the analysis for FES 2024 commenced in October 2023 and ran through to April 2024.
- in support of this the 2035 spatial allocation used FES 2024 as a starting point and was updated based on information on how progressed projects are through planning. The Tx / Dx capacity split and the total overall capacity remained as per FES 2024.

What has changed?

- The latest information on the queue of ready projects at distribution and transmission indicates a recent modal shift in projects being progressed at transmission compared to distribution. This is particularly the case in the 2031 – 35 period.
- The Connections Reform methodology has highlighted that SSEP will further optimise the capacities for the 2031 – 35 period. SSEP is due to be published in 2026.
- It is proposed that we will revisit the Tx / Dx split and spatial allocations for 2035 to provide updated advice to government based on this latest information to provide more certainty for developers in the 2031 to 2035 period.
- The 2030 Tx / Dx split and spatial allocation of capacities will remain unchanged. The next slides provide additional context and data.

NESO
National Energy System Operator

[EXTRACT OF EMAILS BETWEEN MACQUARIE AND DESNZ, COPIED TO NESO]

[redacted]

Subject: [EXTERNAL] FW: Follow up meeting - Macquarie feedback to Clean Power 2030 Action Plan

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OFFICIAL

H[redacted] hope all is well.

Just confirming can you attend this one in person? They have lunch!

I'll have to leave early but will attend for first hour at least...

[redacted]

[redacted]
London, SW1A 2AW
www.gov.uk/desnz |

[redacted]

OFFICIAL

H[redacted]

Hope all is well, we look forward to hosting you in our office next Monday! Can you please confirm attendees from DESNZ / NESO and any dietary requirements? Conscious we'll be

working through lunch so we've ordered some light sandwiches and fruit bowls, but wanted to know if there's any allergies / vegetarian preferences etc.?

[redacted]erstand it would be yours [redacted]sure [redacted]e hasn't responded to th [redacted]m [redacted]be accompanied by anyo [redacted]

I'll add the note to the invite as well but it would be great if all attendees would bring an ID for the reception downstairs.

[redacted]

[redacted]

OFFICIAL

[redacted]

Thank you and the team again for your time yesterday, it was another productive session, most certainly helpful for us and hopefully useful for you and your colleagues too.

From my read of the follow up actions, the most immediate one would be arranging a presentation / Q&A session where Macquarie could provide DESNZ and NESO with more of a deep dive into 6-7 projects as case studies to demonstrate the impact of some of the issues we've discussed on the broader investor decisions, explain the strategic play, and understand NESO's and DESNZ's methodology and data a bit better.

[redacted]couple of his other MAM GI colleagues as well as IGP representatives would be [redacted]y to come over to DESNZ, NESO or host at Macquarie offices w/c 27th January, for a focus session to get a bit more granular on the micro scale as discussed on the call.

We got the feeling this might be the most effective way to go forward but can you please sense check around the houses your end if this would be of interest, and if yes, cou [redacted] elp us connect to NESO please?

Finally, you mentioned a senior roundtable coming up, thank you for flagging that and we look forward to hearing from you more on that.

Many thanks

[redacted]

[redacted]

Subject: Follow up meeting - Macquarie feedback to Clean Power 2030 Action Plan

OFFICIAL

H [redacted]

Happy new year to you and the team, hope you had a restful Christmas holiday.

As promised, we wanted to pass on our more elaborated feedback to the CP 2030 Acti[redacted] and kindly ask for a follow up meeting to discuss this in more detail, ideally with you a[redacted] again, and if possib[redacted]s well.

Given the tight timelines and the potential impact explained below, if we could meet early next week that would be hugely appreciated on our side if you think that would be feasible?

First of all, the plan published by the Government is positive and its ambition is welcomed. In particular, it helps clarify the Government's intentions and helps set a strong direction for us to make future investments in the UK. When reading deeper into the CP30 document published, however, there are several points which could potentially put at risk the investment into projects that are capable of helping the Government achieve its goals by 2030.

Focusing on IGP, our largest UK based solar & BESS developer, we have a portfolio [redacted]

be noted that almost all of these projects have grid offers which we are currently being paid for (including securities), have secured land, and are currently being invested in to progress planning. We would like to work collaboratively with the Government to understand if there is a way to clarify certain points and enable further investments into these projects.

Please see the items we are keen to better understand and clarify following the publication of the Action Plan:

1. *Flexibility around the published zonal and technological capacity limits*
    1. *How did DESNZ come to the Zonal and overall GB-wide Capacity Caps?*
    2. *Is it foreseen that projects which have sufficient readiness and existing near-term grid offers to not receive Gate 2 grid offers as a result of the Capacity caps?*
    3. *In circumstances where there are multiple projects capable of meeting Gate 2 but their capacity is above the stated limit, how will those projects be treated? Key questions around this are:*
        - *How flexible are the caps that have been allocated by technology per zone and per GB overall?*
        - *How flexible are the caps that have been allocated by Capacity per zone and per GB overall?*
    4. *How will you approach shifting allocation between Distribution and Transmission?*
        - *Is there a general intention to push projects from Transmission to Distribution even if it results in perverse outcomes (i.e. higher cost of electricity due to higher installed costs) or is there a specific rationale associated with the limits published in CP30?*
        - *How will you approach circumstances where in similar zones Transmission is oversubscribed and Distribution is undersubscribed?*
2. *Grid Securities:*
    1. *If a project is delayed or loses its queue position due to this reform, will developers have the chance to receive back any grid securities issued for the previous grid connection?*
3. *Clarifying the process and timetables*
    1. *Will there be further written clarification on how the execution of CP30 plan will work – if so when is that expected?*
    2. *Are there expected updates to the readiness criteria or compliance requirements for Gate 2 submissions?*

I look forward to hearing from you and please let me know if you have any questions.

Many thanks,

[redacted]HD

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[redacted]

External Communication

OFFICIAL

H[redacted]

Many thanks for sending this across, and I'll pass this on to relevant colleagues.

As you suggested, once the team has reviewed the report in more detail, a further discussion in January sounds sensible. I'm on leave until the 2nd (along with many colleagues) so I suggest we pick up week commencing 6th.

It has been a pleasure working with you over the last year, and I look forward to building on this in 2025.

Wishing you a Merry Christmas and have a nice break.

[redacted]

3-8 Whitehall Place
London, SW1A 2AW
www.gov.uk/desnz |

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[redacted]

[redacted]

Apologies for the delay in sending our first reaction to the published Action Plan and thank you for sharing it with us under embargo, much appreciated.

The overall sentiment around the CP30 Action Plan grid reform changes remains negative for Macquarie at this point. Whilst we appreciate some level of deviation from the NESO report in the Action Plan, we feel it is not sufficient. The MAM team will review the AP in more detail after Christmas and perhaps we could organise another discussion in January to elaborate?

See some of the key concerns summarised b[redacted]elow and we're happy to follow up in the new year.

1. **Lack of Flexibility Across Transmission and Distribution Targets for Solar**
   The Government's allocation of 10.8GW of solar to Transmission and 36.2GW to Distribution, while slightly improved from NESO's initial recommendations, lacks the flexibility to maximise operational PV by 2030 and 2035. On the latest CPP targets, the Transmission queue is oversubscribed, whereas there is likely to be under-supply at the Distribution level. In addition, the distribution networks lack the capacity to add this volume on the network in such a short time frame which is why many projects have only been able to secure connections to the transmission network. We have not seen any evidence or data which demonstrates how the distribution network can deliver this volume of projects for 2035, however we are exploring this as a priority with other leading UK developers (inc. IGP) and looking to follow up in the NY. In addition, many Solar PV projects on the transmission network are often allocated distribution level voltages (eg 33kv and 132kv) and are likely to be removed from the queue because of a mere technicality of network ownership rather than for any particular economic or policy principle. This rigidity risks good quality Transmission-connected projects being cancelled or delayed.

2. **Insufficient Recognition of Co-Location Benefits**
   The omission of co-location's benefits in both the NESO's Clean Power 2030 advice and the Plan itself is concerning. Co-location can reduce costs, improve efficiency, and enhance investment attractiveness, yet there remains little clarity on its future treatment. Current guidance restricts such projects unnecessarily, despite their potential to support grid resilience and consumer savings. I am keen to discuss ideas for how co-location could be recognised - for instance asset owners who are allocated a primary technology (e.g. solar or wind) of up to say 100MW, should be able to include 99.9MW of battery storage (without needing it to be aligned to Clean Power 2030) - because no additional infrastructure should be required and it helps keep costs down for consumers, investors and the system.

3. **Limited Protection for Investor Confidence**
   We appreciate the grandfathering of projects with CfD, Capacity Market contracts, or planning approval by May 2025 which offers some reassurance for near-term projects, however it leaves significant gaps for long-term investments. Large-scale NSIP projects with substantial upfront costs remain vulnerable, particularly those yet to secure final planning despite advanced stages of examination. Expanding protections to include projects in the examination phase of a DCO or DNS application by 20th December 2024

would alleviate some of this risk for these larger, well progressed and high profile projects.

I hope this helps as initial steer, wishing you and the team a great Christmas break and Happy New Year!

Best wishes

[redacted]

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[redacted]

Subject: RE: Investor and portfolio company feedback to NESO Clean Power 2030 report

OFFICIAL

H[redacted]d team,

Absolutely, I was just waiting for the final version but please see attached:

- [redacted]iliband MP sent on 3 December
- [redacted]iefing note regarding the NESO advice summarising the key messages / asks

I hope this is helpful ahead of tomorrow.

If you could confirm final set of attendees on your side [redacted]hat would be great just so that we're on the same page.

In terms of practicalities, I assume we just need to show our ID and register at the reception where you will pick us up?

Many thanks and we look forward to speaking tomorrow.

Best wishes,

[redacted]

[redacted]

OFFICIAL

[redacted]

External Communication

OFFICIAL

H[redacted]

Hope you had a good weekend and thanks for this.

Could you send across the key points you wish to raise tomorrow when you have a moment? Been asked by a couple of colleagues on what the key themes will be...

[redacted]

London, SW1A 2AW
www.gov.uk/desnz |

[redacted]

[redacted]cquarie.com>
[redacted]y feedback to NESO Clean Power 2030 report
Importance: High

H[redacted]

I hope you're all doing well.

In our last monthly catch up you kindly mentioned that if we had feedback regarding the NESO Clean Power 2030 report, we should pass that onto you.

Some of our investment teams as well as our solar and energy storage portfolio companies have raised a few significant concerns about some of the NESO advice that may jeopardise investment, that they would like to make DESNZ aware of ahead of the Department's reaction to the NESO advice and before it starts being implemented.

We would therefore greatly welcome (preferably in-person but if impossible then virtual) meeting so that my colleagues and our portfolio company Cero can elaborate on this feedback. If you could let us know whether you could bring the relevant colleagues who are leading on the DESNZ response to the NESO guidance, that would be much appreciated, as we are conscious of the short timeframes for this.

Do let me know if we could arrange a meeting for next Tuesday, Wednesday or Thursday and who from DESNZ would be able to attend? I can then confirm on our side to ensure adequate seniority levels.

Many thanks

[redacted]

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[EXTRACT FROM NESO'S METHODOLOGY CHANGE REQUIREMENT TRACKER]

Methodology	Section	Pages	Potential Change Required	Reason	Policy Change?	Tracked change actioned in methodology?
CNDM	5.4, 7.2	25, 26, 66, 67	Potential change to refer to amended solar 2031-35 split in the CP30 plan, if Govt issues an update to the CP30 plan Precautionary mark-up with note that will come out without decision.	Govt might change the solar tx/dx split for 2031-35 in CP30. No associated change required to methodology policy, but currently we refer to onshore wind specifically as a technology that has different granularity in the 2031-35 figure so we would need to also refer to solar	No	Yes, p26

From: [redacted]

Sent on:

To:

CC:

Subject:

Attachment

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Hi [redacted]

Hope you are well.

Just forwarding on an email we received from [redacted] ng concerns about potentially misallocation of large solar DCO projects be [redacted] which they claim will result i [redacted] large solar projects [redacted] V) not receiving phase 2 offers (2031-35). Is this something you have looked into?

Thanks,

[redacted]

[redacted]

Department for Energy Security & Net Zero

3 Whitehall Place, London, SW1A 2HP

www.gov.uk/beis | https://twitter.com/beisgovuk?lang=en

[redacted]

that have submitted DCO planning applications and can deliver by 2030

H[redacted]

We've been further reviewing the CP30 caps for solar DCOs i[redacted]and **we believe there is still a risk that projects that have submitted a DCO planning application (cost [redacted]er project) risk being kicked out of the queue this summer – this includes projects with existing connection dates of 2029-2030. T[redacted]up to[redacted]arge-scale solar projects totallin[redacted]W, representing an investment of ove[redacted]**

This outcome would have a significant negative impact on investor confidence as well as delaying/cancelling projects that are on track to deliver by 2030. Another immediate outcome is that it would not be clear whether the DCO planning examinations could continue – as our understanding is that PINS won't typically examine projects that don't have grid connection offers (due to the need to ensure that the project is deliverable as a pre-requisite for being granted a DCO).

We think that this is probably accidental and may result from NESO having p[redacted] the wrong zone – this appears to undermine the higher caps set by DESNZ in t[redacted]n Plan for Zon[redacted]mpared to the very low values in NESO's CP30 Advice).

Please see our further analysis below and a spreadsheet attached.

Best,

[redacted]

--

Details of analysis [redacted] lar.

- See attach [redacted] heet.
- 2035 Caps:
  - Total "advanced solar DCOs" acros[redacted] ones i[redacted] W – by "advanced solar DCOs", we mean those that could [redacted] planni[redacted] d-May 2025 or are more advanced.
  - Total 2035 T-Solar caps acro[redacted]
- It therefore appears that DESNZ has s[redacted] w all of the advanced solar DCOs to fall within the caps – which would avoid the potential of kicking out any projects that have prepared and submitted planning (cos[redacted]
- However, there are two issues with this:
  - Existence of lots of small T-connected solar projects (e.g. tertiary windings or 132kV-connected schemes at Infrastructure Sites (i.e. where NGET owns the 132kV bar)).

[redacted]

- [redacted] v the 2035 solar cap, only including projects that have submitted [redacted] e advanced.
  [redacted] W above the 2035 solar cap, only including projects that have [redacted] or are more advanced.
  [redacted] me headroom (on this metric), it is highly unlikely that this will [redacted] cription and reallocation [redacted] other, less-advanced schemes that have sec[redacted] planning system (capacity can only be allocated if there are insufficient schemes

[redacted]

NESO spreadsheet

[REDACTED]

NESO shapefiles

[REDACTED]

[redacted]

[redacted]

solar farms until post 2030, including those recently granted DCOs by Ed Milliband

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Thank[redacted]sorry for the delay in following up – we're working through the issues, in discussion with NESO where relevant.

This is complicated stuff to get right, and we haven't got all the way there yet, so a meeting probably wouldn't be that fruitful at this stage as we won't be able yet to share a clear position. But we have taken on board the analysis and suggested ways forward that you've sent, and are continuing to work on resolving the issues.

Best regards

[redacted]

OFFICIAL

[redacted]

Subject: RE: Problem with NESO CP30 advice // would delay connections for almost all T-connected solar farms until post 2030, including those recently granted DCOs by Ed Milliband

OFFICIAL

H[redacted]

Just wanted to follow up on the below.

Given the level of risk that we think we've identified, we're keen to speak with Mission Control before the CP30 Plan is finalised.

I am free on Friday any time before 3pm if that works for you or one of your team.

Best,

[redacted]

OFFICIAL

[redacted]

Subject: RE: Problem with NESO CP30 advice // would delay connections for almost all T-connected solar farms until post 2030, including those recently granted DCOs by Ed Milliband

[redacted]

Please find attache[redacted] analysis of NESO's CP30 Advice to Government, with recommendations for the Government's CP30 Plan.

We find that NESO's CP30 Advice to Government, if accepted, poses major risks of delaying well-advanced renewable energy projects, which would raise energy bills and cause the pathways in NESO's CP30 Advice to be missed.

These risks include:

1. Removing competition in CfD auctions, raising CfD prices and/or leading to the under delivery of capacity.
2. Causing a 12-month investment hiatus for the up to 20 GW of onshore renewables project that have planning permission.
3. Delaying the connection dates of almost all advanced DCO solar projects until post-2030, including those recently approved by Secretary of State Ed Miliband.

Our recommendations include:

1. Applying a significant uplift to the NESO pathways to allow competition between and within technologies, and to account for project attrition (e.g. 33%-50%).
2. Protect grid connection dates for all existing renewables projects (not storage) that have existing connection dates of 2030 or earlier and have already either submitted or secured planning permission.
3. Amalgamate geographical zones and merge the capacity caps for transmission and distribution.

We're very happy to discuss.

Please excuse any mistakes, as we've had to work quickly on this analysis and we don't have access to the same amount of data as NESO.

I have also attached my original email [redacted] which contains our detailed analysis of the impact of NESO's advice on advanced transmission-connected solar farms in th[redacted]rea.

Best,

[redacted]

[redacted]

solar farms until post 2030, including those recently granted DCOs by Ed Milliband

Many thanks [redacted]

We'll follow up with [redacted] a separate email.

Best,

[redacted]

[redacted]ected
solar farms until post 2030, including those recently granted DCOs by Ed Miliband

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H[redacted]

We're well linked with NESO on this - and I hope there's a way through.

[redacted]leading on this for us. Do (over)share any analysis.

[redacted]**ol, Clean Power 2030**

OFFICIAL

[redacted]

Subject: RE: Problem with NESO CP30 advice // would delay connections for almost all T-connected solar farms until post 2030, including those recently granted DCOs by Ed Milliband

OFFICIAL

H[redacted]

Is there any update on this please from a DESNZ/Mission Control point of view.

NESO has said that it's relooking at its numbers – and hopefully amending them to better align with the existing queue of projects.

We have further analysis that we can share, which we think shows further problems (e.g. stopping all further distribution-connected wind in Scotland until at least post-2030).

We just want to make sure that we're sending this analysis to the right place.

Best,

[redacted]

OFFICIAL

[redacted]

Subject: RE: Problem with NESO CP30 advice // would delay connections for almost all T-connected solar farms until post 2030, including those recently granted DCOs by Ed Milliband

Thank[redacted]

Very happy to speak to you and/or your team.

Best,

[redacted]

[redacted]

Subject: Re: Problem with NESO CP30 advice // would delay connections for almost all T-connected solar farms until post 2030, including those recently granted DCOs by Ed Milliband

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Thank[redacted]

We'll look into this.

[redacted], Clean Power 2030

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[redacted]

[redacted] almost all T-connected solar farms until post 2030, including those recently granted DCOs by Ed Milliband

H[redacted]

- **Unfortunately, we think we've found a major issue with NESO's CP30 advice to Government – specifically the locational and Transmission vs Distribution elements.**
- **This would appear to force NESO to delay the connection dates of almost all proposed transmission-connected solar farms until post 2030, including those recently granted DCOs by Ed Milliband.**

We cannot see how delaying projects recently granted DCOs by the Secretary of State is consistent with the Government's Clean Power 2030 Mission or is an outcome that NESO, Ofgem or DESNZ would want.

Please see attached our analysis focusing on solar DCOs in th [redacted] rea. This is only one zone and one technology, so it's possible that this issue is mo [redacted] in the NESO CP30 advice.

We have shared our analysis with NESO. NESO has said that they are looking into this but have not at this stage suggested that our analysis is incorrect.

We are keen to speak urgently if you have time.

Going forward

We remain generally supportive of the direction of travel of these reforms but are concerned about adverse unintended consequences such as these that are now appearing. We believe there is a significant risk that further issues will be revealed, and that the reforms would need to be delayed.

We think there is a way to mitigate these risks, while still achieving the Government's aims. In our view, this should include:

1. Simplifying the proposed locational and Transmission/Distribution limits to fewer zones and merging Transmission and Distribution.
2. Giving certainty to a much wider range of projects with near-term connection dates – e.g. all projects (excluding storage) with existing connection dates pre 2030 that have submitted planning applications.

Best,

[redacted]

Transmission Solar caps for Zon[redacted]

[redacted]

						Caps	4,000	5,200								
First TEC Reg	Status	Connected/Consented	Submitted	Will be submitted	Combined rank	Cumulative MW	Within 2030 cap?	Within 2035 cap?	Above 2035 cap?	[redacted]				MW Connected	MW Increase / Decrease	MW Effective From
Unknown	TCPA - granted	1			2	120	1	-						0	120	30/06/2027
22/10/2020	DCO - granted	1			2	370	1	-						0	250	31/10/2029
22/10/2020	DCO - granted	1			2	620	1	-						0	250	30/07/2030
22/10/2020	Connected	1			2	633	1	-						13	0	
22/10/2020	TCPA - granted	1			2	650	1	-						0	17	06/09/2019
22/10/2020	DCO - granted	1			2	1,130	1	-						0	480	30/11/2028
22/10/2020	TCPA - granted	1			2	1,180	1	-						0	49.99	30/10/2024
10/12/2020	TCPA - granted	1			2	1,230	1	-						0	49.9	31/10/2025
13/01/2021	TCPA - granted	1			2	1,287	1	-						0	57	01/05/2024
13/01/2021	TCPA - granted	1			2	1,337	1	-						0	49.995	30/05/2025
23/07/2021	DCO - granted	1			2	1,937	1	-						0	600	01/09/2029
14/10/2022	DCO - granted	1			2	2,337	1	-						0	400	01/10/2027
17/11/2023	TCPA - granted	1			2	2,394	1	-						0	57	30/09/2025
22/10/2020	DCO - submitted		1		1	2,894	1	-						0	500	01/08/2028
22/10/2020	DCO - submitted		1		1	3,056	1	-						0	162.3	01/06/2025
13/01/2021	Rejected - In appeal window		1		1	3,106	1	-						0	49.995	30/09/2025
23/07/2021	DCO - will be submitted pre-end May			1	1	3,606	1	-						0	500	31/10/2027
23/07/2021	DCO - will be submitted pre-end May			1	1	3,846	1	-						0	240	01/06/2029
28/01/2022	DCO - possible submission pre-end May			1	1	4,206	1	-						0	360	30/08/2026
28/01/2022	DCO - possible submission pre-end May			1	1	4,646	-	1						0	440	01/05/2028
17/06/2022	DCO - submitted		1		1	5,046	-	1						0	400	01/04/2028
17/06/2022	DCO - submitted		1		1	5,446	-	-						0	400	01/04/2030
17/06/2022	DCO - will be submitted pre-end May			1	1	6,046	-	-						0	600	01/06/2029
17/06/2022	DCO - will be submitted pre-end May			1	1	6,646	-	-						0	600	31/10/2029
31/01/2023	DCO - possible submission pre-end May			1	1	6,886	-	-						0	240	30/05/2033
					Total	6,886	4,206	840	1,							
					DCO	6,422										
					TCPA	464										

[redacted]

						Caps	2,100	3,300								
First TEC Reg	Status	Connected/Consented	Submitted	Will be submitted	Combined	Cumulative MW	Within 2030 cap?	Within 2035 cap?	Above 2035 cap?	[redacted]				MW Connected	MW Increase / Decrease	MW Effective From
22/10/2020	Connected	1			2	50	1	-						49.9	0	
22/10/2020	TCPA - granted	1			2	100	1	-						0	49.9	30/10/2026
22/10/2020	TCPA - granted	1			2	150	1	-						0	49.995	25/04/2024
22/10/2020	DCO - granted	1			2	650	1	-						0	500	31/10/2027
22/10/2020	TCPA - granted	1			2	700	1	-						0	49.9	01/05/2023
20/04/2021	TCPA - granted	1			2	750	1	-						0	49.995	30/06/2024
26/11/2021	DCO - granted	1			2	990	1	-						0	240	01/01/2028
17/06/2022	TCPA - granted	1			2	1,090	1	-						0	100	31/10/2024
22/10/2020	DCO - will be submitted pre-end May			1	1	1,590	1	-						0	500	31/10/2031
28/05/2021	DCO - will be submitted pre-end May			1	1	2,090	1	-						0	500	31/10/2028
23/07/2021	DCO - will be submitted pre-end May			1	1	2,590	1	-						0	500	01/07/2029
					Total	2,590	2,590	-								
					DCO	2,240										
					TCPA	350										

Notes

Planning status based on a combination of information from PINS/LPA websites and developer websites.

To be within 2030 cap, only 1 MW of headroom is required.

To be within 2035 cap, 100% of the project must be within the cap (the project that just falls outside will be offered the opportunity to reduce capacity to stay 100% inside and therefore to receive a Gate 2 Offer.

Prioritisation is based on consented projects, then planning submitted projects. Within each category, projects are ordered by earliest appearance in the TEC Register (based on [redacted]s records - this is our best available proxy for queue position, which is not published).

Only includes projects that are directly connected to the transmission network - i.e. excludes embedded projects.

Appendix 22 - Lime Down Solar Park Heads of Terms for Option for Cable Easement

Lime Down
Solar Park

DALCOUR MACLAREN

Our R
Your [redacted]

[redacted]

The Barn, Bignell Park Barns,
Chesterton, Bicester,
Oxfordshire OX26 1TD

D [redacted]
M
E Limedownsolarpark@dalcou

08 September 2025

Lime Down Solar Park
Heads of Terms for Option for Cable Easement

Further to our recent correspondence regarding access to your land for surveys, you will be aware Lime Down Solar Park ("the Project") is in the process of applying for a Development Consent Order (DCO). The project team continues to have a strong preference to secure the necessary rights through voluntary agreements with landowners and any other affected parties.

Draft Heads of Terms were issued to your agent on 2nd June 2025 and we requested feedback to ensure suggestions and amendments could be incorporated into a format suitable for distribution to all landowners with whom the Project is seeking to enter into Option Agreements for Deed of Easement.

As you are a landowner from whom the Project is seeking rights through land, we hereby enclose populated Heads of Terms for your consideration. The Heads of Terms enclosed refer to two principal agreements which the Project is seeking to complete with you:

1. **Option Agreement for grant of a Deed of Easement**

Known as an Option Agreement, this agreement secures the land for a period of time within which the Project can serve a notice on you to enter into an agreed Deed of Easement. The area over which the Project is seeking the Option Agreement is shown within the enclosed Option Plan.

The Option Agreement sets out the payments which will be made for entering into the Option Agreement followed by subsequent payments should the Project exercise their rights to enter into a Deed of Easement.

2. **Deed of Easement**

The Project is seeking a Deed of Easement in perpetuity which will cover rights for the Project to install and maintain their cables. The enclosed documentation identifies the rights the Project are seeking and also includes a number of provisions which ensure that you and your land are protected from losses as a result of any of the Project's works.

Payments

Payments will be made to you as landowner for entering into the Option Agreement and the Deed of Easement. In addition, there are Incentive Payments available for meeting certain deadlines. The enclosed documentation provides clarity and further detail on the eligibility for the above mentioned payments.

Lime Down Solar Park

DALCOUR MACLAREN

Next Steps

We would recommend that:

a) If you have not already done so, appoint a Land Agent and Solicitor to act on your behalf and please notify us of their appointment. If we have already been informed by you or have been in contact with a Land Agent working on your behalf, we have sent them a copy of this correspondence, and their name and address will be detailed within the Heads of Terms.

b) Please instruct your agent to check that the following details are correct:

   (i) The ownership of the land

   (ii) The description of the land

   (iii) The title number or extent of the land

c) Please ask your agent to notify Dalcour Maclaren of any Occupiers on the land and the type of occupation they have at your earliest convenience

d) Contact Dalcour Maclaren if any details shown are not correct

Whilst the Heads of Terms are not legally binding, they set out the principle terms for the Option Agreement, including the rights the Project is seeking to acquire as well as the financial considerations. The terms of the Option Agreement only become legally binding upon the execution of formal legal contracts.

Island Green Power remain committed to working with landowners. While the Development Constent Order can permit Island Green Power to compulsorily acquire the required land rights, the use of these powers is considered to be a last resort. This is why we continue to seek voluntary agreements and has included an incentive payment if the Heads of Terms are signed by **Wednesday 17th December 2025.**

We encourage you to review the Heads of Terms with your agent (if you have appointed one) and we are happy to meet to address any queries.

Once you have had the chance to consider the enclosed Heads of Terms please contac[redacted]or email us at limedownsolarpark@dalcourmaclaren.com. Similarly, we are happy to arran[redacted]ss the project in more detail and/or any of the information above.

In the meantime, please do not hesitate to contact us if you have any initial queries.

Yours sincerely

[redacted]

Dalcour Maclaren

Enc: Heads of Terms, Option Plan(s), Return Envelope

AGREED HEADS OF TERMS
(Subject to Contract & Without Prejudice)

OPTION FOR EASEMENT – Land at Land being part of [redacted]

A.	**PARTIES**	
1.	**Project**	Lime Down Solar Park Limited
2.	**Landowner(s) / Grantor(s)**	[redacted]
3.	**Occupier(s)**	***Landowner - please confirm basis of occupation and provide a copy of tenancy agreement at earliest opportunity***
4.	**Developer / Grantee**	Island Green Power UK Limited (or a project SPV, being an affiliate of IGP UK) Unit 25.7, Coda Studios, 189 Munster Rd, London SW6 6AW
5.	**Grantor's Solicitor**	Tel: Mob: Email:
6.	**Grantor's Agent**	Tel: Mob: Email:
7.	**Grantee's Solicitor**	In-House Legal Counsel Island Green Power UK Limited Unit 25.7 Coda Studios, 189 Munster Road, London SW6 6AW [redacted]
8.	**Grantee's Agent**	Dalcour Maclaren – [redacted] Tel: Mob Ema **AND** [redacted] Island Green Power UK Limited Unit [redacted] ad, London SW6 6AW Mob Ema

B. PAYMENT SCHEDULE and TIMINGS

Incentive Payments		
1.	**Heads of Terms Incentive**	[redacted] Payable to Grantor in circumstances where HoTs are signed within 12 weeks after issue of HoTs. Paid on exchange of Option Agreement.
2.	**Option Agreement Incentive**	[redacted] Payable to Grantor in circumstances where Option Agreement exchanges within 40 working days of issue of undertaking and draft documents. Paid on exchange of Option Agreement.
3.	**Easement Consideration**	£[redacted]er acre of the Easement Strip Area (***being 80% of the land value***)
4.	**Option Fee**	10% of the Easement Consideration [redacted] Paid on exchange of Option Agreement.
5.	**Entry Fee**	70% of the Easement Consideration [redacted] Paid within 20 working days of service of a Notice of Works or (if earlier) date of entry. Where no Notice of Works is served during Option Period, paid on completion of Deed of Easement.
6.	**Easement Completion Fee**	20% of the Easement Consideration [redacted] Paid on completion of Deed of Easement.
7.	**Estimated Easement Strip Area**	[redacted]res, calculated on the basis of a consistent width of 10 metres and a length of [redacted]etres. The Parties acknowledging this estimated area may change (within the [redacted]and) as a result of surveys, ground conditions etc. "As laid" drawings to be produced following completion of construction. Final Easement Strip Area shall always be as shown as green on the Easement Plan.

he Grantor Property [is / is not] subject to an option to tax for VAT. All payments above are shown exclusive f VAT.

C. OPTION

1.	**Grantor's Property**	That part of the Grantor's title as shown edged red on the Plan. Registered Title(s) **OR** Root of Title (if known) [redacted]

2.	**Option Land ("Easement Corridor")**	[redacted]
3.	**Access Route**	The Grantee is to be granted a vehicular and pedestrian right of access across the Grantor's Property as may be agreed between the Parties acting reasonably to provide access to and from the public highway and subject to obtaining any necessary consents.
4.	**Option Period**	From the date of signing to 31st December 2030.
5.	**Option Notice**	The Grantee can exercise its Option to take a Deed of Easement at any time during the Option Period by serving an Option Notice.
6.	**Entry during Option Period: Surveys**	The Grantee may access the Option Land on not less than 24 hours' notice to conduct necessary Non-intrusive surveys. The Grantee may access to the Option Land for the purpose of using monitoring equipment and carrying out intrusive surveys on not less than 5 days' notice. The Grantee will be permitted to undertake vegetation clearance required for undertaking the intrusive surveys. The Grantee may access the Grantor's Property to conduct non-intrusive and intrusive surveys, advanced compensation will be payable for surveys in accordance with the following rates: • Non-intrusive and land classification surveys – nil • Archaeology trenches up to 1.8m x 50m - £325 per trench • Archaeology trenches greater than 1.8m x 50m - £3.60 per m^2 above $90m^2$ • Borehole (no monitoring) - £250 per location • Borehole (with monitoring) - £300 per borehole and 12 months monitoring + £150 per year thereafter • Trial pits up to 3m x 3m - £250 per pit • Window sample up to 0.5m x 0.5m - £50 per sample • Other surveys - £250 per survey
7.	**Entry during Option Period: Enabling Works**	The Grantee may access the Option Land on not less than 20 days notice to conduct necessary Enabling Works including but not limited to: a) Environmental Mitigation Works b) Fencing c) Site clearance including vegetation removal d) Pre-construction drainage.
8.	**Entry during Option Period: Installation Works**	Subject to service of a Notice of Works following grant of the DCO, and payment of the Entry Fee, the Developer may access the Option Land to construct, install, and operate Conducting Media (including, without limitation, cable infrastructure, jointing bays, and inspection boxes). Such Installation Works shall be undertaken in accordance with the relative provisions of the Easement. The Grantee may commence the Installation Works by serving not less than 20 working days' notice on the Grantor, in writing (**Notice of Works**).

		If not already provided, the Notice of Works shall include indicative plans detailing the extent of the land required for working areas.
9.	**Cable Depth**	In agricultural land, the cables and underground apparatus will be located at a depth of not less than 1.2 metres to the top of the ducting save where impracticable due to engineering reasons.
10.	**Conditions of Entry**	All rights of entry are subject to: a) Reasonable prior notice, where relevant as specified above, such notice may be by telephone or email unless otherwise stated; b) Minimising nuisance and interference; c) Repairing damage to the Grantor's reasonable satisfaction and compensating for losses, including crop loss, scheme-related losses, agent fees, disbursements, and unrecoverable VAT and if repair is not possible (see further 'Compensation' below); d) Access to Option Land being via the Access Route, with damage to access roads repaired; e) The Developer documenting site conditions with photographs before any intrusive works are carried out, unless otherwise agreed.
11.	**Compensation**	a) The Grantee will either restore or fairly compensate the Grantor for any direct physical loss or damage caused by exercising its rights, and in respect of actual loss or penalties from existing agri-environment schemes or any other subsidies arising due to the Installation Works, subject to the Grantor taking reasonable steps to mitigate its losses. Any agreed compensation shall be paid within 30 days of settlement. b) The Grantee will cover reasonable professional fees incurred by the Grantor in agreeing compensation, based on the complexity of the matter, properly recorded time sheets, and in line with RICS Guidance. c) Should the parties fail to agree any compensation payable, then either party can refer the disputed matter for determination by an independent Expert.
12.	**Planning**	Subject to agreement on these Heads of Terms being reached, the Grantor is not to: a. Object to the DCO application, planning application, consent or appeal by the Grantee; b. make any planning application during the Option Period within the Grantor's Property without the Grantee's consent (not to be unreasonably withheld or delayed) and: c. appeal any planning refusal. If the Grantor has submitted a representation objecting or expressing opposition to the DCO Application, the Grantor shall, upon signature of these Heads of Terms, make a written representation to the Secretary of State for Energy Security and Net Zero and to the Planning Inspectorate as soon as reasonably practicable to make clear that it has no remaining objection or opposition to the DCO Application and to withdraw any and all prior representations made in relation to the DCO Application.
15.	**Legal Costs**	Grantee to pay Grantor's Legal costs of up t[redacted]
16.	**Agent Costs**	Grantee to pay Grantor's Agent's costs up t[redacted]

17.	**Exercise of Option**	The Easement is to be entered into, in whole or part, within 30 Working Days of service of the Option Notice by the Grantee (or earlier by mutual agreement). The Grantor shall release its signed counterpart on reasonable request, in order to enable simultaneous completion of easements along the route.
18.	**Assignment**	The Grantee may assign or charge its interest in the Option Agreement to a related company (including Macquarie Group) or a funder or Network Operator without consent of the Grantor. Assignment to any other party with consent not to be unreasonably withheld. No limitations on change of control. Grantor to be informed of changes.
19.	**Grantor Obligations**	a) If the Grantor disposes of its interest, it will procure that the incoming proprietor complies with the terms of the Option for Easement including provision of a Deed of Covenant, which obligation shall be secured by a restriction on the Grantor's title b) The Grantor shall not do anything that could interfere with or adversely affect the Project or the Grantee's ability to exercise the rights granted by the Option and as proposed by the Easement c) The Grantor will not plant trees, alter the ground level, dig (save for conventional agricultural operations), nor build or erect structures over the Option Land d) The Grantor shall not grant any rights or interests over the Option Land without the consent of the Grantee (not to be unreasonably withheld or delayed) save for short term faming tenancies which will not interfere with the rights conferred under the Option (including grant of the easement) e) The Grantor will enter into any wayleaves, easements or other agreements with the Network Operator/ other utilities providers as required for the Project on the Network Operator/utility providers standard terms, provided that where such agreement is entered into instead of the Easement the Grantee shall still pay the Easement Completion Fee (and Entry Fee, if not already paid); f) The Grantor will, at the reasonable request of the Grantee, enter into a Direct Agreement with the Grantee's/Project Funder; g) The Grantor will make reasonable efforts to assist the Grantee securing any necessary consents in relation to other third-party rights granted across the Option Land and in particular where the Tenant is not to be a party to the Option, the Grantor will assist the Grantee to procure the consent of the Grantor's Tenant and to their entry into the Option (and if necessary grant of the Easement)
20.	**Compulsory Acquisition Powers**	The Grantor acknowledges that the Grantee will include compulsory acquisition powers within its planning application for the Project, but the Grantee will not exercise such powers to acquire any of the Grantor's interests in the Grantor's Property without the Grantor's consent, save where the Option is found to be unenforceable, or the Grantor fails to adhere to the terms of the Option or the Grantor suffers an insolvency event. There shall be no restriction on use of powers against any third-party interest in the Grantor's Property.

D. Easement

1.	**Easement Strip**	The land within the Easement Corridor, notified by the Developer to the Grantor in the Option Notice, required to form the permanent easement strip within which the service media shall be sited.
2.	**Works Strip**	A strip of land not more than 30 metres wide, notified by the Developer to the Grantor in the Option Notice, for the purposes of installation of the service media (in circumstances where such installation has not been done during the option period)
3.	**Rights**	An easement (being a right in fee simple) to: a) (to the extent not already undertaken) carry out the Survey Works, Enabling Works and Installation Works in C6, C7 and C8; b) lay to a minimum depth of 1.2 metres, operate, maintain and remove underground electricity apparatus, including ancillary communication wires for the purpose of monitoring the cables for operational requirements and other ancillary apparatus; c) carry out works on the Easement Strip and within the Works Strip including relocation of service media and drainage works (in accordance with provisions below); d) at all reasonable times to have access over and along the Grantor's Property to and from the Easement Strip and Works Strip with or without vehicles and equipment at any for the purpose of construction, with reference to operational access, such routes across the Grantor's Property as may be agreed between the Parties acting reasonably to provide access to and from the public highway and to/from adjoining land over which the Developer has analogous rights, e) divert and/or stop up public rights of way (if applicable and required by the planning consent or local planning authority); f) park vehicles on the Easement Strip and Works Strip; g) construct a temporary hard core access track along the Access Route and of access over the Access Route for any associated use with the Project at all times with or without vehicles, plant and machinery. The easement shall be granted for the benefit of the land comprised in the Project and the undertaking of the Grantee as an electricity generator.
4.	**Compensation**	a) The Grantee will either restore or fairly compensate the Grantor for any direct physical loss or damage caused by exercising its rights, and in respect of actual loss or penalties from existing agri-environment schemes or any other subsidies arising due to the Installation Works, subject to the Grantor taking reasonable steps to mitigate its losses. Any agreed compensation shall be paid within 30 days of settlement. b) The Grantee will cover reasonable professional fees incurred by the Grantor in agreeing compensation, based on the complexity of the matter, properly recorded time sheets, and in line with RICS Guidance. c) Should the parties fail to agree any compensation payable, then either party can refer the disputed matter for determination by an independent Expert.
5.	**Drainage**	The Grantee must, prior to undertaking the Installation Works, engage an independent contractor to assess the impact of such works on any existing drainage system and shall, where reasonably necessitated by the result of such assessment, install, modify, maintain, and remove drainage systems on the Grantor's Property in order to ensure these are not adversely impacted. The Grantee must ensure drainage is no worse than before, with a pre-construction record of condition to be undertaken where deemed reasonably necessary by the independent contractor. Subject to health and safety requirements, the Grantor shall be entitled to inspect (at its own cost,

		acknowledging the Grantee is paying for the independent contractor assessment) any drainage works whilst they are in progress and prior to backfilling. The Grantee may discharge water from excavations onto the Grantor's Property with prior consent (not unreasonably withheld or delayed), except in emergencies. The Grantee will make reasonable efforts to maintain irrigated water supplies to affected areas or pay compensation. The Grantor shall provide details of existing drainage and irrigation systems promptly following request. For the avoidance of doubt this clause will apply if the Installation Works are completed during the Option Period.
6.	**Soil Management**	Prior to stripping any topsoil and subsoil in connection with the Installation Works the Grantee shall produce a method statement according with best practice for: a) the excavation of separate layers of the topsoil, subsoil and substratum; b) the separate storage of the layers of the topsoil, subsoil and substratum excavated in a manner which allows for their proper reinstatement; c) the keeping of proper records of the depths of topsoil, subsoil and substratum extracted (copies of which records shall be made available to the Land Party on request without charge); and d) reinstatement in a manner which is intended to return the topsoil, subsoil and substratum to their original positions as far as is reasonably practicable, and shall thereafter comply with it. For the avoidance of doubt this clause will apply if the Installation Works are completed during the Option Period.
7.	**Liability for Hazardous Substances**	The Grantee will be responsible for contamination created by its activities, save where the Grantor failed to notify the Grantee of known contamination. The Grantor shall remain responsible for historic contamination, save where released by the Grantee.
8.	**Liability & Insurance**	The Grantee to be liable for breach and negligence up to £10 million per claim and in aggregate. The Grantee shall procure public liability cover for £10 million.
9.	**Dealings**	The Grantee may charge its interest in the Easement to a funder without consent of the Grantor. The Grantor will enter into a Direct Agreement with the funder if reasonably required. The Grantor will enter into an Adoption Agreement with the Network Operator for nil consideration.
10.	**Decommissioning**	Save to the extent any decommissioning plan requires otherwise, in the event the Grantee wishes to permanently abandon the cables and these have not been adopted by the Network Operator, the Grantee shall decommission the cables and ancillary equipment by: a) At the request of the Grantor, removing any equipment which is at a depth of up to 0.9 metres of cover from the surface; b) making safe any equipment which is not removed; and

		c) (to the extent necessary) reinstating the surface to the Grantor's reasonable satisfaction.
11.	**Grantor Obligations**	a) The Grantor shall not do anything that will adversely affect the Grantee's ability to lay and operate the cables easements under the Easement Strip; b) The Grantor will not plant trees, alter the ground level, dig nor build or erect structures over or within the Easement Strip or (during the Installation Works) the Works Strip; c) The Grantor shall ensure any rights or interests granted over the Easement Strip shall be subject to the Easement; d) The Grantor will permit access to the Easement Strip and Works Strip and over the Access Route; e) The Grantor will enter into any wayleaves, easements or other agreements with the Network Operator/ other utilities providers as required for the Project on the Network Operator/utility providers standard terms for nil consideration; f) The Grantor will, at the reasonable request of the Grantee, enter into a Direct Agreement with the Grantee's/Project Funder.

By signing these Heads of Terms, I/We agree to:

Accept the offer set out above and instruct our solicitors to enter into negotiations to agree the Option for Easement and form of Easement in substantially the same form as the Grantee's standard templates, terms of which will reflect the terms set out in these HOTs.

Confidentiality - These Heads of Terms are confidential to the parties named whether or not the matter proceeds to completion, save that reference to them being entered into may be referred to with the Planning Inspectorate

Signed: .....(Grantor)

Date: 2025

Signed: .....(Grantee)

Date: 2025

Appendix 23 - Noise Monitor October 2023

12th October 2023

Appendix 24 - Noise Monitor October 2023

20:21

84

3 [redacted] Dermot Farrington
online

12 Oct 2023



16:39



17:25

Appendix 25 - Noise Monitor October 2023, communication from TetraTech

20:20

68 [redacted]

13 Oct 2023

Messages and calls are end-to-end encrypted. Only people in this chat can read, listen to, or share them. **Learn more**

[redacted]

Not a contact • No common groups

Safety tools

Block

Add

Good morning, I am from Tetra Tech, here to move the noise meter. Is someone available to come and meet me or would you like me to just get on with moving it by myself? Thank you 11:08