ELECTRICITY ACT 1989

TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997

OBJECTION by *DUNS LEES HILL SOS*, *Save Our Skyline, (**DLH**) a third party objector group in an application by Fred. Olsen Renewables Ltd (**FORL**) for six wind turbine generators (37-45MW), solar PV generators (up to 60MW), and Battery Energy Storage Systems (**BESS**) of 60MW and associated development at Lees Hill, Langtonlees Farm, Duns, Scottish Borders.*

1 INTRODUCTION

DLH is a group of concerned and affected residents of Duns and the surrounding area.

2 NEED FOR THIS DEVELOPMENT/STRATEGIC IMPORTANCE

Scottish Government's (SG) September 2024 Green Industrial Strategy referring (p 21) to onshore wind says, *"recent pipeline analysis shows that we should be on track to deliver this"* (i.e. at least 20GW by 2030)

This pipeline (of projects) analysis was prepared by BVG Associates for Scottish Renewables in April 2024 and shows:

Pipeline analysis as at March 2024	
	MW
Operational	9,461
Under Construction	1,246
Consented	6,328
	17,035
in planning	6,578
in development*	7,330
	30,943

* projects identified by members to Scottish Renewables but may not be in the public domain

i.e. 17GW is in progress to be delivered. Therefore, to achieve 20GW by 2030 only requires:

a) 45% of the projects in planning to be approved and delivered or
b) 21% of the projects in planning and development to be approved and delivered

The maximum wind generation from Lees Hill at 45MW (37-45MW in the Application) is less than 0.7% of the capacity in planning at present. There are 158 turbines in s.36 Planning (and 132 in Scoping) across the Borders (as at this date). Lees Hill has 6, or <4% of those in planning.

If this project is approved the maximum it would contribute is only 1.5% of the gap to 20GW, which is much less than other projects under consideration (and on its own the wind generation component would have been a decision made by the Council, not SG).

On any view, therefore this project cannot be considered to be strategic to SG meeting its onshore wind target.

In DLH's view the scenarios presented in this partial pipeline analysis prepared for the wind industry significantly understates the likely scenarios by using very conservative assumptions. i.e. **the low scenario is more than 10% below the current consented developments.**

BVG summary scenarios for the wind farm industry in 2030, in GW.

Pipeline scenarios		
		GW
Scenario 1	(low)	15.2
Scenario 2	(medium)	20.9
Scenario 3	(high)	24.6

DLH's view of the industry's partial/conservative pipeline analysis is supported by a recent report by Scotland Against Spin (SAS) which identifies projects not approved as at October 2024 but in the planning system. These projects total 8.7GW of which 1.1GW is progressing without objections. **This later analysis reduces the percentage approval required from 45% of the projects in planning to just 25% to achieve 20GW.**

This more recent analysis further strengthens the arguments above. The SAS October analysis and a comparison to the industries March figures (above) can be found in the attached Appendix 1.

Interim submission

In these circumstances this proposal is quite clearly irrelevant to the stated national ambition and is NOT substantiated.

3 NATIONAL AND LOCAL PLANNING POLICY CONSIDERATIONS

The Planning (Scotland) Act 2019 provides that the later in date of NPF 4 and any adopted Local Plan should prevail in the event of conflict or ambiguity.

NPF 4 was adopted in February 2023. The Scottish Borders LDP2 was adopted in August 2024 and is therefore the later in date, by some 18 months. However, Policy ED9 of the LDP provides that development proposals for renewable energy generation are to be assessed in accordance with NPF 4 Policy 11 paragraphs b) to f) and "other relevant provisions of NPF4".

This unspecific guidance amounts to some abrogation of local planning control, save that NPF 4 is, by statute, a part of every local plan. In other words, there appears to be no discrete local planning guidance.

NPF 4 Policy 11 has become well known, but its direction of travel is not all one way. The general thrust of policy favourable to "*all forms of renewable, low carbon and zero emissions technologies*…" is carefully qualified by the criteria set out in paragraph 11 e) requiring maximisation of net economic impact, and planning authorities' common sense precautionary approach towards established interests.

These criteria are all addressed in this submission, which as may be expected looks at the proposal from the point of view of those most closely affected, namely its potential hosts for 35 years or longer.

The 13 criteria or factors are

i. impacts on communities and individual dwellings, including residential amenity, visual impact, noise and shadow flicker;

ii. significant landscape and visual impacts, recognising that such impacts are to be expected for some forms of renewable energy. Where impacts are localised and/or appropriate design mitigation has been applied, they will generally be considered to be acceptable;

iii. public access, including impact on long distance walking and cycling routes and scenic routes;

iv. impacts on aviation and defence interests including seismological recording;

v. impacts on telecommunications and broadcasting installations, particularly ensuring that transmission links are not compromised;

vi. impacts on road traffic and on adjacent trunk roads, including during construction;

vii. impacts on historic environment;

viii. effects on hydrology, the water environment and flood risk;

ix. biodiversity including impacts on birds;

x. impacts on trees, woods and forests;

xi. proposals for the decommissioning of developments, including ancillary infrastructure, and site restoration;

xii. the quality of site restoration plans including the measures in place to safeguard or guarantee availability of finances to effectively implement those plans; and

xiii. cumulative impacts.

The criteria in Policy 11 e) are (all but one-item x.) engaged.

In short,

i. The landscape, visual and noise impacts on the communities of Duns, Gavinton, Polwarth and Westruther and on neighbouring residential and domestic amenity is significantly adverse.
ii. The landscape and visual impacts are not localised, but widespread. They have not been subjected to any form of mitigation by design or careful site selection. The location of the proposal is dictated by landowner willingness and developer choice.
iii. The right of responsible access under the Land Reform (Scotland) Act 2003 will be frustrated.
iv. Contrary to the assertions of the applicant, the MoD has objected to the proposal.
v. The JRC has only agreed to the proposal subject to micrositing conditions.
vi. Road and construction traffic impact on the main road through Longformacus will be significant, likely to lead to destruction of the carriageway, and will impose immense inconvenience on local residents and business people.
vii. Historic Environment Scotland has strongly recommended that Turbines 1 and 2 should be removed or relocated.
viii. The risks to private water supplies for homes adjacent to the site are unknown.
ix. The impact on biodiversity are likely to be severe.

x. There are no known impacts on trees, woods and forests.
xi. A decommissioning bond should be required.
xii. The applicant has offered no detail for a decommissioning bond.
xiii. Cumulative impacts of the different elements of the proposal have not been considered, and landscape and visual impacts are predictably significant and adverse.

4 MOD OBJECTION

MOD objected on 13th June 2024 (to ECU) on Air Defence radar grounds, and on the potential to create a physical obstruction to low flying aircraft in training.

There has been no further correspondence from the ECU or the developer, so based on that, the MOD has no reason to change its position from one of Objection. The EIA states there will be no issues (Ch 13.9.32-35), which is clearly wrong. Contrary to the EIA's assertions, and those of David Bell Planning (Planning Statement §4.8.55) **the MoD Objection remains in place.**

5 EIA NEUTRALITY, SUFFICIENCY, INVALIDITY AND LEGALITY

Natural Power (**NP**) **is the lead EIA consultant for the Lees Hill Development.**

FORL submitted its Gatecheck report for this proposal in September 2023 which stated *"The Proposed Development has been designed by the Applicant in association with civil engineers with input from its lead EIA consultants Natural Power".* In the NTS (§1.3.1-1.3.3), FORL spell out the credentials of NP without mentioning that they are a related company.

It is evident from a reading of the EIA and examination of the accounts of the applicant and Natural Power that the applicant has actively concealed the fact that the two entities are both wholly owned subsidiaries of the same listed company. Over the last four years more than 60% of NP's turnover has come from FORL. This calls into question the neutrality and objectivity of the conclusions drawn by the consultant. An analysis of their interrelationship is presented in Appendix 2.

The concealment of this relationship appears to be in breach of the Institute of Environmental Management and Assessment's (IEMA) professional Code of Conduct which requires members (including NP) to

"Advocate and apply high ethical standards, acting with honesty, integrity and objectivity" and which goes on to state that members should "*declare conflicts of interest that may influence – or be perceived to influence …. Objectivity*".

It is submitted that it cannot possibly be argued, when this relationship is actively hidden from the report's recipients, that a consultant in such an intimate relationship with its client can be described as "*objective*".

Cumulative effects not fully considered

It is axiomatic that an EIA must be complete and fit for purpose. That means that it must identify significant effects upon the environment before attempting any analysis of whether those effects are

likely to be adverse, beneficial or neutral. In the 2017 Regulations, Schedule 4 para 5 (e), an EIAR is required to include the "…*cumulation of effects with other existing and or approved projects*…"

The final section of the sub paragraph reads "*The description of the likely significant effects on the factors specified… should cover the direct effects and any indirect, secondary, cumulative, transboundary, short term, medium term, and long-term permanent and temporary, positive and negative effects of the development.*"

Lees Hill Renewable Energy Park (LHREP) is a proposed hybrid development, and in correspondence with the Applicant it is said to be "*one of the country's first hybrid projects to be submitted.*" This term is taken to mean a combination of energy sources, namely wind turbines, solar panels and Battery Storage (BESS).

Referring to paragraph 5(e) above, this EIA refers only to cumulative visual and noise effects as coming from the wind turbine component.

However, even with that limitation the Technical Appendices stand apart from one another.

- TA 11.1 is entitled Construction Noise Report.
- TA 11.2 is entitled operational noise report and refers only to turbines.
- TA 11.3 is entitled BESS and solar noise report.

These sections are not inter-related, nor do they cross-refer, but clearly more than one of these potential noise sources may emit noise at the same time.

In addition,

- No allowance been made in the turbine noise calculations for noise reflections from solar panels

- Whilst cumulative wind farm noise for one cottage is included in the assessment, an indication of the impact of all the noise sources (including those assessed in terms of both ETSU-R-97 and BS 4142) should be made.

In truth therefore the EIA has failed to properly consider the potential or actual cumulative impacts of noise.

Inappropriate site selection

The Electricity Act 1989, by Schedule 9 (3)(1)(b), requires that an applicant "*shall do what he reasonably can to **mitigate** any effect which the proposals would have on the natural beauty of the countryside or on any… flora, etc…"*. Decisions are to be made in the public interest. Obviously, the best form of mitigation of adverse impacts is careful and appropriate site selection. The applicants already control nine Scottish wind farm sites including the nearby Crystal Rig Windfarm of >90 turbines.

To minimise impact on people and established settlements and landscape, why do the applicants not co-locate Solar Panels, BESS and Wind Turbines at their existing generating stations? At Crystal Rig, nearby, by means of Application No ECU00004759 the Applicants have chosen to do just that. However, with **91 turbines** on site at Crystal rig this application is for only c.50% of the solar array proposed at Lees Hill, and without BESS in this application.

BESS and Solar Panels could be more effective and more quickly productive at existing more topographically contained sites with existing grid connections, such as Crystal Rig. The Applicants say that at Lees Hill "*Solar Panels aim to maximise the overall generation of the proposed development.*" [NTS, Lees Hill § 3.3.1] and "*… in addition to optimising the wind energy utilisation the BESS can provide additional valuable ancillary services to the grid operator to help stabilise the grid…*[NTS, Lees Hill § 3.4.3].

Given the above objectives, comparable benefits could be achieved at existing sites such as Crystal Rig, which already has a grid connection. Benefits at much greater scale could be achieved in the public interest and at much greater speed at sites with existing connections.

The legal issue flows from NPF 4, Policy 11 (i) and (iii). The Applicant contends that there is merit in building a combined site at Lees Hill hosting wind, solar and BESS. The Policy in NPF 4 suggests that adding BESS to *existing* generation facilities should be supported.

It appears that the industry agrees. In Renewable UK's (RUK) April 2024 Report entitled "**Making the most of Renewables: the role of onshore co-location in accelerating an integrated energy system**" they say:

- (p12) *Co-locating to an existing site **minimises the need for more costly grid capacity** which leads to **reduced infrastructure investment costs**.* (original report contains emphasis).
- (p25) "*currently strict planning requirements do not apply to existing onshore wind farms or to repowering and the extension of site co-location with operational onshore wind generation as well as solar technologies is a good opportunity to bring more renewable generation to the system.*

To put this in context the RUK report states that (p14)*"there is over 420 GW as of December 2023 of projects waiting to connect to the transmission system, with offers for new projects often giving dates in the late 2030s for connection. The pipeline of projects waiting to connect to the transmission network has been growing, with over 500 GW as of time of writing; there is still more waiting to connect to the distribution network."*

DLH does not seek to intrude on the Applicant's commercial reasoning. However, the purpose of Planning is to manage the development and use of land *in the long-term public interest* (Planning Scotland) Act 2019, s. 1).

In the NTS (§2.1.1) a key aim of the design process is said to be to *limit* the overall footprint of the development, whilst maximising the positive renewable energy generation and other benefits and *minimising the environmental impacts* wherever possible. (emphasis added).

At Crystal Rig the solar array is to be set apart from the wind turbines. At Lees Hill it is to be aggregated within the footprint of the wind turbines' development area. Crystal Rig already has a substation and sufficient connection to the Grid. Lees Hill does not. **This anomaly needs to be explained.**

Hazard risk

In reality, the Applicant has ignored the cumulative impacts and risks arising from mishap or accident between the different components of this development and the baseline land condition. **This concern is significantly increased by the Applicant's choice of a site with a 'major hazard accident pipeline'** (HSE consultation response 19 April 2024) **running through the middle of the development.**

For the avoidance of repetition, the reader is referred to the section below on Risks.

Lack of consideration in the EIAR of ALL direct and indirect effects

As is well known and understood, before consent and deemed planning permission can be granted for a development project such as the LHREP which is likely to have significant effects on the environment, legislation requires an EIA to be carried out. As we have seen the applicable legislation is to be found in the 2017 Regulations, which is derived from EU Directive 92/11/EU and, since Brexit, is transposed across the UK.

The 2017 Regulations require an EIAR to identify, describe and assess the likely "direct and indirect significant effects" of the project on the environment, including (among other factors) the impact on climate. The process of assessment must include public consultation, which must be taken into account.

The Regulations do not prevent the planning authority from giving consent for a project that is likely to cause significant harm to the environment; but it requires the authority to reach a reasoned conclusion on the environmental impact and to take this conclusion into account in making its decision.

If this project goes ahead, it is not merely likely but inevitable that the oil used in turbine casings, the turbines themselves, the metals and other compounds used in the blades and the steel of the towers will eventually become unusable and will require disposal. Batteries, which have well known toxic, contaminating qualities, require to be replaced. They are inextinguishable in the event of fire, but may nevertheless require millions of gallons of water for cooling or fire control, are a particular concern. The River Tweed and its tributaries are not far away. All of these are inevitable by-products or - in the relevant parlance - 'emissions' from the project.

In a longer time frame. such waste may have a significant downstream impact on climate. It is uncertain that the quantum of these emissions can be estimated using any established methodology. The EIAR does not provide any estimate as part of its assessment. The issue is whether these end-of-life emissions constitute "direct or indirect ... effects of the project" within the meaning of the EIA Directive and 2017 Regulations. If they do, they must be assessed as part of the EIA.

In *R (on the application of) Finch on behalf of The Weald Action Group v Surrey County Council and Others 2024 UKSC 20*, the UK Supreme Court was unanimous in holding that this question requires a series of evaluative judgments about whether there is a sufficient causal connection between the components of the proposal and any possible environmental effect by way of emissions whenever it, or they, may occur. This is a matter upon which different decisionmakers could reasonably take a

range of different views. The case has been followed in the High Court by *West Cumbria Mining* [2024] EWHC 2349 (Admin). *Finch* binds the decision maker in this case.

The end-of-life by -products that will occur and require to be managed so as to safely dispose of (for example) waste oil, turbines and turbine blades, solar panels and batteries, the steel in towers and concrete and reinforcing steel bar are all "effects of the project" because it is known with certainty that, if the project goes ahead, all these will have to be disposed of in a manner which will, or probably will have significant effects on the environment, whether by combustion, seepage, effects on ground water, burial or reuse in an industrial process.

An argument that national planning policy (such as that found in NPF 4, for example), is relevant to the scope of an EIAR was rejected in *Finch*. The assessment and the consenting régimes are distinct. Scotland and the UK's policies of encouraging domestic production of renewable energy is relevant to the decision whether to grant permission for a project. But it does not dispense with the requirement to assess the environmental impact of the project or as limiting the scope of that assessment before the planning decision is taken. The purpose of an EIA is to ensure that, whatever the decision taken, it is taken with *full knowledge and public awareness* of the likely significant environmental consequences.

Consequently, an applicant's failure to make such an assessment, and a decisionmaker's failure to require such an assessment, consult upon it and take it into account means that any decision to grant s. 36 consent and/or deemed planning permission for the project would be unlawful. That conclusion applies to the EIA for the Lees Hill REP.

Salami slicing

A further area of material deficiency in the EIAR concerns the assessment of the "project" as a whole. An electricity generating station of whatever character is useless without some means of transmitting power to the end user. In the same way, a power line, whether overhead or underground, is useless without a source of generation. The two are clearly interdependent.

The project's grid connection does not form part of this application under the EA 1989. Neither the EIAR, nor the application gives any information on the potential environmental effects arising from the *required* grid connection.

It may be that the applicant believes that it is sufficient to state that an application for connection would be made "later" under the EA 1989 s. 37. The point is that nothing is said in the EIAR about the location or route of a required grid connection for the proposal, or any part of it.

The report by David Bell Planning of March 2024 states (para 2.5.15) (without evidence) that the grid connection is only some 1.5 km distant from the development. Corroboration of this assertion is not to be found anywhere within the EIAR. Eccles, where there is a substation, is 11km away.

Extensive caselaw sets out the definition of a "project" for EIA purposes. It is acknowledged that the question of what constitutes a project is at the outset a matter of judgment for the decision maker. No submission is made by the Applicant in this regard. No request for flexibility is sought.

A relevant consideration in determining the true nature of a project is that of *functional interdependence*, where one part of a development could not function without the other. At the least 'interdependence' is an indication that two or more components constitute a single project.

Neither could stand alone without the other. Nobody could sensibly argue that the individual components of this proposal could operate without a grid connection.

Given this required inter-dependence, it is submitted that all the proposed electricity generation facilities at Lees Hill and their grid connection should properly be assessed and determined *simultaneously*. Not to do so risks a finding that the EIAR would be found unlawful, because all the components' predictable environmental effects are not being considered together, according to the law.

These matters can only be considered where the application for all parts of the proposals and their connections occur simultaneously in a single combined decision-making process. Dividing the consenting process into separately determined applications means that the interdependent characteristics of the components of the proposal cannot be appropriately taken into account in decision making.

Interim submission

This EIA is accordingly deficient because

(1) the objectivity of the applicant's lead EIA consultant is clearly in question

(2) its assessment of certain important cumulative impacts is incomplete, because it only assesses certain of the impacts of wind turbines

(3) The inappropriate choice of this location for a hybrid development

(4) The Major Pipeline Hazard Risk is inadequately assessed (see further below)

(5) Downstream environmental effects are neither identified nor assessed – see *Finch* above.

(6) The EIAR omits any assessment of the potential significant impacts of the required grid connection.

It is required by the 2017 Regulations that consideration of significant effects and impacts should be *complete* as regards the "*project*". Regulations 4 and 5 apply to this case.

Since the EIAR is plainly incomplete, the EIAR is itself invalid and unfit for a determination. That makes it unlawful.

6 LANDSCAPE AND VISUAL IMPACT

The proposal would be associated with the lower transitional landscape between the settled farmlands of the Merse and the Lammermuir Hills. It would comprise a complex development of very large wind turbines, extensive solar array and the other BESS and ancillary development located on an open site close to roads and settlement. It would contrast the established association of wind farm development with the more extensive and sparsely settled uplands of the Lammermuir Plateau.

Significant and major adverse effects would occur on the *Upland Fringe with Prominent Hills* and the *Upland Fringe Moorland with Hills* LCTs. It would also have significant adverse effects on a key quality of the adjacent Lammermuir Hills SLA. Significant adverse effects would occur on key views, with many of these effects being of major significance within approximately 5km of the proposed development site. These include views from residential properties lying close to the proposal.

The disparate and complex nature of the development, its lowland context and the openness of the site in views across moorland and from surrounding ridges and hills contribute to the severity of landscape and visual effects. This proposal is not the right development in the right place, and the LA considers that the degree of severity of effects on landscape character and on views reflects the inappropriateness of the location of this proposal.

These are the conclusions of Carol Anderson, CMLI, an independent consultant whose detailed report and credentials are attached in Appendix 3. These conclusions are endorsed by DLH, who have employed her.

Historic Environment Scotland (HES)

HES in their communication dated 30 May 2024 say that Turbines 1 and 2 would have a significant impact on Dirrington Little Law and the view from Twin Law Cairns, which is a Scheduled Monument (No 4638). They *"**strongly recommend that these turbines should be removed or relocated**……"*
That is not an option proposed by the Applicant.

Impact on Duns - inconsistency

In the landscape viewpoint assessments in the EIAR, Chapter 6 LVIA, page 17, in Table 6.4, overall the impact on the town of DUNS is considered to be *Not Significant (negligible)*.

This finding is anomalous because in the same Table 6.4 (page 16) VP4 Duns East at 6.7km is assessed as *Significant (moderate).* That is the *furthest* point in Duns from the proposed development, yet there is no published assessment of the impact on Duns West (the *closest* point) at 5.96km (±6.0km) which logically must be greater than the impact on the eastern side of the town. See DLH's photomontage taken at 5.96km in Appendix 4 see table below

Viewpoint	distance from nearest turbine (kms)	level of effect - visual (Table A6.1.6)	magnitude of change to the landscape (6.1.5.21)		**Settlement**	distance from nearest turbine (kms)	level of effect - visual (Table A6.1.6)	magnitude of change to the landscape (6.1.5.21)
VP4 A6105 Duns east	6.7	Significant	Moderate		Duns	5.5	Not significant	Negligible
DLH Duns West photomontage	*6.0*	*Significant*	*Moderate*					
VP5 Gavinton	4.7	Significant	Moderate		Gavinton	3.5	Not significant	Minor
VP9 Westruther	8.5	Significant	Moderate		Westruther	8.5	Not significant	Minor

In addition, the development at Wellrig Park, lying west of the minor road to Longformacus and consisting of some 14 houses is even closer to the proposal and has uninterrupted views. Despite asking for that location to be included, there are NO photomontages from this location.

In the same table, the Gavinton viewpoint is assessed as *Significant (moderate)* while the Gavinton settlement is assessed as *Not Significant (minor)*.

In respect of Westruther, once again the viewpoint is assessed as *Significant (moderate)* at 8.5km distance, while the settlement is once again *Not Significant (minor)*.

In respect of the Polwarth viewpoint, the assessment is *Significant (moderate)* but there is no settlement assessment.

There is little explanation for these anomalies. On the face of it, Table 6.4 is extremely unreliable and must therefore be read with caution.

HUME CASTLE is a Category A Listed Building located at 10.7km distance. The viewpoint is only assessed as *Significant (moderate)*. It is a restored building of great significance to Berwickshire and the Merse. Historic links between Hume Castle and the Dirringtons from the 19th century ('The Great Alarm') are of importance. When viewing the Dirringtons from the Castle most parts of all turbines will be visible.

VISUALISATIONS: NatureScot visualisations advice says; "*in some case the planning authority may find the provision of a viewpoint pack helpful (A3), ……the images should be prepared from the same baseline photography*." DLH believes these visualisations would have been very helpful for the non-

professional reader. e.g. all local residents. Requests to the Applicant for such A3 visualisations (from their chosen viewpoints) were refused without explanation, save to assert "*they are not required*."

DLH submits this is contrary to the Applicants' assertions in the PAC Report regarding their engagement with the public. A3 productions would have incurred minimal cost. DLH concludes that the resulting visualisations would demonstrate the significant and dominant scale of the development from the chosen viewpoints, and that their stance is designed to conceal reality.

Interim submission

Professional landscape analysis, supported by HES, shows that this proposal is not the right development in the right place. The landscape consultant considers that the degree of severity of effects on landscape character and on views reflects the inappropriateness of the chosen location for this proposal. Accurate analysis of impacts depends on accurate data. In this instance it is absent.

7 RISKS ASSOCIATED WITH SITE SELECTION AND THE GAS PIPELINE

The Health and Safety Executive (HSE)

On 19 April 2024 HSE wrote:

> ***"there is potential to initiate a major accident at the major accident hazard pipeline, for example during the development construction phase and potentially the operational phase, because the development area intersects the route of the major accident hazard pipeline. We understand that the UK onshore pipeline operators association - UKOPA - has produced guidance, to be found at http://www.ukopa.co.uk/published-documents/good-practice-guides/"***

DLH consider that the applicants have not followed this UKOPA Guidance, found in the two relevant UKOPA Good Practice Guides; they are '**Requirements for the Siting and Installation of wind turbine and photovoltaic installations in the vicinity of buried pipelines** (UKOPA/GP/013 and UKOPA/GP/014).' In correspondence, UKOPA confirm that the first of these is under review to take account of changes in turbine size and weight since the original analysis was carried out in 2012.

- Turbines are *required* to be sited 1.5 times the mast height from the pipeline (180m for a 200m turbine) Fig 3.1 Site Constraints in the EIAR shows only a 150m buffer zone.
- The application seeks a 50m micrositing allowance, which brings further into doubt potential compliance with the Guidelines.
- In respect of the PV part of this application, the application drawings show the PV installation adjacent to the buried pipeline. Guidance about separation distances is not prescriptive but the need for separation is clear for the avoidance of conductivity, lightning and other hazards.
- However, the UKOPA Guidelines for the siting of both solar photovoltaic installations and wind turbines in the vicinity of buried pipelines reads, (at para 3.1 and 4.1) *"Note that formal planning permission from the local authority does not take account of the hazards that the*

PV farm might pose for buried pipelines. Obtaining planning permission" (and *a fortiori* s.36 consent) "*should not therefore be seen as confirmation that legal duties under the Pipeline Safety Regulations and the Construction Design Management Regulations 2015 have been met.*"

- There are currently no UKOPA guidelines for BESS, but the Department for Business and Trade's Document '**UK Battery Strategy'** (December 23 2023) provides detailed safety advice at page 31, in particular requiring Local Planning Authorities to refer to the guidance published by the National Fire Chiefs Council for consideration when determining applications, and to consult with local fire and rescue services before issuing decisions.

The Scottish Fire and Rescue Services is not a consultee for this application. Nevertheless, these risks cannot be ignored. The National Fire Chiefs Council for the UK has issued guidance entitled **Grid Scale Battery Energy Storage System Planning for local Fire and Rescue Services** applying to grid scale electricity storage over and beyond any concerns about the proximity of a Gas Pipeline. These Guidelines deal with water volumes required, duplication of accesses, prevention of fire spread between banks of PV panels, wind turbines and other infrastructure. There is no evidence that the Applicant has followed these guidelines.

The third relevant UKOPA Guide (UKOPA/GP/) 016 entitled **Pipeline Hazard Distances** that should be used by Local Authority Emergency Planners, requires that emergency hazard distances should be between 500m and 900m, dependent on the size of the pipeline.

The key advice reads (p6) "*steps should be taken **to ensure** that potential ignition sources are not introduced into the area around the release where gas could potentially be present in flammable concentrations*." It should be noted that the advice imposes a duty to *ensure*, not merely a duty to take reasonable care. Clearly potential turbine, battery storage, substation and solar array ignition sources are fixed within these distances and are risks that cannot be avoided in the event of a pipeline breach.

These risks, due to the choice of site by the applicant, will not only be of concern during the operation of the Energy Park but potentially heightened during the construction and decommissioning phases of the development when heavy plant and machinery will be operating on site.

Whilst perhaps infrequent, the risks associated with turbine failure and BESS fires do not seem to have been considered by the applicant. If 1.5x the hub height is considered to be the safe distance for a turbine from a gas pipeline, then this is also a reasonable guideline for a safe distance for a turbine to be positioned from the BESS and substation infrastructure. Diagram 3.1 in the EIAR shows that the distance from Turbine 1 to the Battery storage location and sub station is well within this 1.5x hub height guideline.

The applicants operate a large windfarm at Crystal Rig. In a pending application (ECU00004759) for extensive PV plant they say areas of existing turbines infrastructure substations were **excluded** from any potential development areas. This suggests that at this location the proximity of solar panels to wind turbines was not considered by the applicant to be appropriate. Given that Lees Hill and Crystal

Rig are so close by one another, and the Applicants have control of both, it is reasonable to seek a clear *planning* explanation for differing treatments of the same types of application.

The Crystal Rig Solar Project EIAR paragraph 3.3.3 and figure 1.3 set out what are called a series of "constraints" on co-location. However, none of the bulleted items are actually constraints but all point in the direction of showing the advantages of co-location. The constraint of juxtaposition is left unexamined in both the Lees Hill and the Crystal Rig solar applications.

A further risk resulting from the development is that, in its consultee response, the JRC (8 May 2024) said *"Due to the dynamic nature of radio communications this development can only be cleared subject to the following micrositing conditions T1 30m, T3 15m, T6.15m."* Such conditions have not been demonstrated to be possible.

Interim submission

In the implementation of every one of these required and important safety duties the Applicant has evidently failed.

8 NET ECONOMIC BENEFIT

NPF4 states very clearly at Policy 11 c) that *"development proposals will only be supported where they **maximise*** **net** economic impact"

The Applicant itself states (Chapter 14, para14.9.5 and 14.9.7) that both the development and construction phase and the operation and maintenance phase of the proposed development *"is (are) expected to result in a negligible (positive) effect on"* both the Scottish Borders and Scottish Economy i.e. that **any economic benefit accruing would be marginal at best.**

However, there is no reference in the submission that the inevitable reduction in the current economic activity of the working farm of Langtonlees has been taken into consideration in the submission.

Paras *14.6.6/7 states that local/Scottish businesses "could secure/estimated to secure contracts worth…."* This would indicate that these were maximum figures rather than a conservative estimate as indicated by BiGGAR Economics in their letter of 9 July 2024.

SG draft, **but extant** advice on Net Economic Benefit and Planning (March 2016) Draft+Advice+on+Net+Economic+Benefit+and+Planning.pdf (www.gov.scot) states:

- *"Assessing the additional benefit from a proposal will usually involve making some assumptions, and is therefore not an exact science**. …… assumptions made are completely transparent, evidence-based and as accurate as possible**"*
- *"The key criterion in assessing the economic impact of a proposed development is to estimate the economic position where the development proceeds, and then compare it with the estimated economic position if the proposal does not go ahead. The difference between these two estimates is the net economic benefit of the development."*

- *"Any assessment of the net economic benefit should indicate whether the level of uncertainty is high, medium or low"*
- *Care should also be taken, particularly in the case of large-scale, complex projects, to guard against 'optimism bias'"*

FORL/BiGGAR economics (BE) have provided no judgement on the level of uncertainty, as required by the SG report. Further:

- 14.6.4 states that the analysis is "*informed (sic) by BiGGAR economics internal analysis of wind farms, solar and battery storage facilities"*
- BiGGAR Economics seems to have produced a number of reports for the wind industry, i.e.
    - in a press release in 2021 BE claimed to have supported 5 of 6 recently consented wind farms
    - BE has produced a report on wind farms and tourism on which it and the industry relies
    - In April 2024 BE stated that they were "working with Scottish Renewables to create a socio-economic benefit framework to replace what is currently in an EIAR."
    - BE remains a major supplier to renewables developers

the key issue with this inextricable link to the industry is that there is no evidence that these papers have been peer reviewed. This could potentially lead to the optimism bias [1] outlined in the SG draft report of 2016, paragraph 25.

BE's relationship with the wind farm industry is likely to lead to the optimism bias cautioned against in the 2016 paper. Particularly with a project that on the applicant's own admission produces such a marginal economic benefit, avoidance of bias can only be achieved by the model(s) and its assumptions being peer reviewed.

DLH has asked FORL for a copy of its model but this has been refused as it is "*commercially sensitive*". DLH disputes that the economic model should be withheld. Decision makers should require this to be disclosed so that a peer review could be carried out by a suitably qualified consultant.

Interim submission

As a result of these enquiries DLH believes decision makers need further and more robust evidence that the 2016 guidelines have been met by applicants, in particular that they provide:

- clear evidence-based assumptions on which the model is built
- evidence that the results are truly the net position and
- the level of uncertainty in the conclusions reached.

[1] The demonstrated systematic tendency for appraisers to be over optimistic about key project parameters including capital costs, operating costs, works duration and benefits delivery.
See annex four of the Green Book and other Government supplementary guidance.

9 ORNITHOLOGY AND ECOLOGY*

* details of all the citations referenced in the Ornithology and Ecology sections are provided in Appendix 5

Breeding birds of conservation concern are included in the assemblage on Greenlaw Moor SSSI and the surrounding land, including Lees Hill. All are included in the flight activity surveys for the EIAR and shown in Chapter 8, Tables 8.9 and 8.10 and the moorland breeding bird survey in Table 8.11.

The ornithological assessment is carried out within the following legislative and policy framework.

European and post Brexit

Council Directive 2009/147/EC on the Conservation of Wild Birds (the Birds Directive)

The main provisions of the Directive include the maintenance of all wild bird species across their natural range, with the encouragement of various activities to that end; and the identification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species.

Environmental Impacts Assessment Directive 2014/52/EU

The EIA Directive replaces the Directive 97/11/EC, and outlines the processes that must be undertaken when completing an EIA, from scoping, reporting through to decision making, challenges and appeals. The directive sets out when projects require EIA and when they do not.

The Directives are transposed post-Brexit into UK law

UK and Scottish legislation

The Conservation (Natural Habitats &c.) Regulations 1994 (as amended)

These regulations transpose Council Directive 92/43/EEC into UK law. The Regulations provide for the designation of *Natura 2000* sites, the protection of European Protected Species (EPS), and the adaptation of planning and other controls for the protection of *Natura 2000* sites.

Wildlife and Countryside Act 1981 (as amended)

The Act makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy the nest of any wild bird while that nest is in use or being built (with certain exceptions). In addition, the Act makes it an offence to intentionally or recklessly disturb birds and their young listed in Schedule 1(Part 1) at, on or near an 'active' nest.

The Nature Conservation (Scotland) Act 2004 (and Scottish Biodiversity List)

The Act places a duty on public bodies to further the conservation of biodiversity and increases protection for Sites of Special Scientific Interest (SSSIs). The publication of the Scottish Biodiversity List satisfies the requirements of Section 2(4) of the 2004 Act. The Scottish Biodiversity Strategy (2004) was developed out of this Act, and the 2020 Challenge for Scotland's Biodiversity builds on this strategy, providing clearer view of the types of activities that should be considered.

The Electricity Works (Environmental Impacts Assessment) (Scotland) Regulations 2017

The regulations were introduced to implement Directive 2014/52/EU ("the 2014 Directive"), integrating environmental considerations of Scottish Electricity Works projects with a view to assessing significant environmental impact and assessing proposed mitigation.

Scottish Planning Policy
The Scottish Government published National Planning Framework 3 (NPF3) in 2014. It has been superseded by NPF 4 adopted in February 2023 a a part of every LDP. It alters renewables policy in a number of areas, including focused support and the provision of a framework within which planning judgment is to be exercised. It places Climate Change and Biodiversity Net Gain at the head of its planning priorities.

Local
Scottish Borders Local Development Plan 2023 (adopted August 2024) conforms with NPF 4 in respect of renewables development.

Ornithology

Conservation status for birds is assessed periodically and published under the auspices of the various national and international conservation and scientific organisations, and groups of organisations. 'Red' denoting the highest category of concern, 'Amber' the second most concerning category.

U.K – Birds of Conservation Concern, 5th report (Stanbury et al, 2021).

Europe - Birds in Europe 4: The Fourth Assessment of Species of European Conservation Concern (Burfield et al, 2023)

Global – International Union for the Conservation of Nature (IUCN) Red List of Threatened Species (IUCN, 2022)

Shown below are a list of birds from that assemblage that have notable conservation concerns together with their assessed status where relevant.

Skylark

Conservation status

U.K. Red listed

Population change between 1995 and 2020, 15% decline

Change in breeding distribution area between 1968–72 and 2008–11 1.9% contraction

Curlew

Conservation Status,

U.K. Red listed

Europe, Near Threatened

IUCN Near Threatened

Population change between 1995 and 2020, 48% decline

Change in breeding distribution area between 1968–72 and 2008–11 19.2% contraction.

Lapwing.

Conservation Status,

U.K. Red listed

Europe, Vulnerable

IUCN, Near Threatened

Schedule 1 licence required (to disturb), No.

Population change between 1967 and 2020, 59% decline.

Change in breeding distribution area between 1968-72 and 2008-11, 18.6% contraction

Golden Plover.

Conservation Status:

U.K. Population stable**.**

Change in breeding distribution area between 1968–72 and 2008-11 20.9% contraction.

Oystercatcher.

U.K. Amber listed

Europe, Vulnerable

IUCN, Near Threatened

Population change between 1995 and 2020, 22% decline.

Woodcock.

U.K. Red listed

Change in breeding distribution area between 1968–72 and 2008-11 52.4% contraction.

Snipe

U.K. Amber listed

Europea, Vulnerable

Change in breeding distribution area between 1968–72 and 2008-11, 31.5% contraction.

Redshank

U.K. Amber listed

Europe, Vulnerable

Change in breeding distribution area between 1968-72 and 2008-11, 43.1% contraction.

Population change between 1995 and 2020, 49% decline

As shown above, many of the bird species resident in the Lees Hill area are already experiencing declines in population and breeding distribution. There are other related vulnerabilities e.g. habitat loss due to land use changes and farming intensification. And issues resulting from climate change.

As a result, they have been given conservation concern status in UK lists and some in international lists.

Whilst it is acknowledged that likely effects on birds from the presence of wind turbines are species specific, and variable, any additional disturbance within their habitat is likely to have negative impacts on their breeding success. Evidence as to why is explained below.

THE EFFECTS OF THE PRESENCE OF WIND TURBINE DEVELOPMENTS ON UPLAND BREEDING BIRDS.

The table below shows predicted reductions in breeding densities of upland birds around wind turbine developments. Birds that are already subject to stresses impacting on their breeding success are being excluded from land on which wind farms have been built. Self-evidently, this adds to pressures on populations.

Displacement effects can extend for more than 500m in all directions from a turbine array. This adds a large additional area to the zone in which the breeding success and foraging resources for species are negatively impacted.

Table 1. Predicted reductions in breeding densities, or raptor flight activity, within 500m of the turbine array, assuming modelled habitat usage is proportional to breeding density (Pearce-Higgins (2009))

Species	**Predicted percentage reduction in density (95% confidence interval)**		
Buzzard	**41.4%**	range	(16·0–57·8)
Hen Harrier	**52.5%**		(−1·2–74·2)
Golden Plover	**38.9%**		(4·3–59·0)
Snipe	**47.5%**		(8·1–67·7)
Curlew	**42.4%**		(3·4–72·8) *b*
Meadow pipit	**14.7%**		(2·7–25·1)
Wheatear	**44.4**%		(4·9–65·2)

(Note. The confidence interval overlapping zero for hen harrier is explained in the main text of Pearce Higgins, 2009)

Pearce-Higgins' conclusions include the following:

"We find considerable evidence for localized reductions in breeding bird density on upland wind farms".

and:

"...we suggest that new wind farm developments across other similar windy semi-natural habitats in north-west Europe... should therefore also avoid high densities of potentially vulnerable open country species such as waders and raptors".

DISPLACEMENT AND HABITAT LOSS EFFECTS ON TOTAL BIRD DENSITIES ASSOCIATED WITH WIND TURBINES.

Fernandez-Bellon et al (2018) studied bird densities at 12 upland wind farms in Ireland, compared to control sites without wind farms. Most earlier studies focused on effects of direct mortality. However indirect effects (e.g., displacement, habitat loss) on avian community diversity and stability is increasingly being recognised. Total bird densities were lower at wind farms than at control sites, and the greatest differences occurred close to turbines.

"Open-habitat species' densities were lower at wind farms but were not related to distance from turbines and were negatively related to size of the wind farm, (i.e. the larger the wind farms the lower the total bird density)*. This suggests that, for these species, wind-farm effects may occur at a landscape scale. This highlights the importance of construction effects and siting of turbines, tracks, and other infrastructure in understanding the impacts of wind farms on biodiversity."*

Golden plover

Douglas et al (2011) states no reduction in Golden Plover populations in the presence of wind farms. This is contradicted spectacularly by Sansom et al (2016) (a team which included David Douglas from Douglas et al (2011)) which stated that, whilst there was no effect on golden plover populations during construction of turbines and wind farm infrastructure, once turbines were in operation, Golden Plover numbers in their vicinity and for 400m beyond, were reduced by 79% in comparison to pre turbine baseline figures.

UK Golden Plover numbers are stable. But breeding distribution has been considerably reduced in recent decades (by 20.9%) largely due to habitat loss. Lees Hill turbine array will contribute further to that reduction by taking up breeding habitat presently available to this species.

Curlew and Snipe

Pearce-Higgins et al (2012) concluded that upland bird species numbers are considerably reduced (compared to reference sites without turbines) due to disturbance during the construction of wind farms. Curlew decline by about 40% during construction, snipe by 53%. Small passerine species (skylark, meadow pipit, and stonechat) seem to benefit from habitat disturbance and may increase in number. Some species recover well shortly after construction is completed and turbines are in operation (e.g. red grouse). Other species, most notably Curlew and Snipe do not recover.

"... identifying these two waders as being particularly vulnerable to wind farms, and by a similar magnitude of effect."

Considering the perilous conservation status of these two species, further development of wind farms within their breeding habitat would represent significant harm to their chances of recovery from their current near threatened (curlew) and vulnerable (snipe) status categories.

Lapwing

Rosin et al (2016) examined the seasonal drivers behind bird populations living near wind farms, and the implications for development and management of wind farms regarding conservation. The study was conducted in Poland. It was found that Lapwing abundance was negatively related to the number of wind turbines in a landscape throughout the investigation. More wind turbines lead to

fewer lapwings, which are already suffering severe declines in population and breeding distribution. (see above).

A study by Steinborn and Reichenbach (2011) focuses on the impact of wind turbines on lapwings in southern East Frisia (Germany) over a seven-year period. It highlights significant findings such as the avoidance behaviour of lapwings around wind turbines. Lapwing refrain from breeding within 100m of wind turbines.

DISPLACEMENT AND COLLISION MORTALITY OF RAPTORS DUE TO PLACEMENT OF WIND TURBINES.

The flight activity surveys for the environmental impact assessment report provided by Fred Olsen Renewables (Tables 8.9 and 8.10) also include information relating to raptor sightings in the area of the development. The species listed are all susceptible to being killed by rotating turbine blades:

- White tailed eagle
- Short eared owl
- Merlin
- Peregrine falcon
- Red kite
- Hen Harrier

In addition to those sightings the 'South of Scotland Golden Eagle Project', a reintroduction project based in the west of The Southern Uplands has recently announced that there are now 47 golden eagles currently being monitored as they move around the south of Scotland, including a recent release in the Lammermuir Hills (Birdguides, (2024)).

All of these species, except the short-eared owl, are subject to special protective measures under the Wildlife and Countryside Act 1981, though it is 'Amber' listed as a bird of conservation concern in the U.K.

The counts of individual birds of the species listed above, sighted at Lees Hill area and the wider area of the Lammermuir Hills, are small, which is normal for predatory birds. In addition, raptors in the U.K. have suffered centuries of persecution and habitat loss due to human activity in the landscape. This makes their populations particularly vulnerable to further losses due to collision with wind turbine blades. Their susceptibility to collision varies between species due to differences in hunting strategies and flight heights. However, the construction of six, 200m wind turbines in their flight space can only increase risk of mortality from collision.

(NB* 'Acceptable increased mortality limits' of between 1 and 5% are used in wind farm environmental impact assessments.)

Schippers et al (2020), investigating collision mortality limits (in species including raptors) in wind farm impact assessments, concluded that,

"The responses of the population to a mortality increase are generally much higher than the mortality increase itself..."

For small populations of species that reproduce relatively slowly, the loss of one bird can be disproportionately consequential compared to more numerous, rapidly reproducing species.

Schippers et al (2020) article title is significant in this context

"Mortality limits used in wind energy impact assessment underestimate impacts of wind farms on bird populations".

Krone et al (2017) recounts that between 2002 and 2012 collisions with wind turbines are known to have killed 75 white tailed eagles in Germany. They further state;

> *"As no systematic carcass search has been carried out in German wind farms so far, white-tailed sea eagle fatalities are mainly random findings. The actual collision rate can be substantially higher as carcasses are usually quickly eaten or removed by scavengers".*

Studies regarding displacement of raptors, a concept known as 'functional exclusion', are recent and occasionally contradictory. This apparent anomaly is at least in part due to differences between species relating to flight height and hunting strategies, and variations in behaviour connected to age and life stage activity (breeding, migrating etc').

Dohm et al (2019b) found that displacement of raptor species did occur around wind farms. But that the degree of displacement varied with species, age and life stage activity of birds. It also found that some species develop an acceptance of wind turbines over time. Therefore, numbers for some species can recover over timescales measured in years.

Fielding et al (2021) studied Global Positioning Satellite (GPS) tagged golden eagles and their interactions with 80 wind farms across Scotland and found that;

> *"Eagles were eight times less likely to be within a rotor diameter's distance of a hub location after turbine operation (turbines in motion)..."*

They also suggested that the eagles saw the turbines as evidence of the presence of humans. A species that they have learned, through long experience, that it is wise for them to avoid.

Pink footed geese, wind turbines and power cables.

To the west of the Lees Hill proposed development site is a large area of heather moorland known as Greenlaw Moor. 1171.92 hectares of this moorland is designated a site of special scientific interest (SSSI) (gov.uk (a)). One of the reasons for the Moor being designated an SSSI is its breeding bird assemblage, many of which are subject to special legal protection due to their rarity and/or conservation concern status.

Part of Greenlaw Moor SSSI is designated as Dogden Moss special area of conservation (SAC) for the European habitat listed below. Part of Greenlaw Moor SSSI is designated as Greenlaw Moor special protection area (SPA) for the birds listed below.

Habitat: Active raised bog.

Birds: Pink-footed goose (*Anser brachyrhynchus*), non-breeding

In addition to the above protected areas, 247.6 hectares around Hule moss, a shallow lochan roughly in the middle of Greenlaw Moor, is designated a 'Ramsar' site (gov.uk (b)).

A Ramsar site is a wetland site designated to be of international importance under the Ramsar Convention of 1971, an international environmental treaty under the auspices of the United Nations Educational, Scientific and Cultural Organization (UNESCO). It provides for national action and international cooperation regarding the conservation of wetlands, especially those providing waterfowl habitat.

Hule Moss is so designated because it '*supports 1% or more of the individuals in a population of one species or subspecies of waterbird*.' In this case pink footed geese.

Pink footed geese are migratory birds which breed in high northern and arctic latitudes. The entire Icelandic and eastern Greenlandic population of this species (currently approximately 479,000 birds (Wood et al (2020)) comes to Britain in winter. 3 to 6% of those birds use Hule moss as an overnight roost site. Because the total pink foot population has risen steeply in recent years, the numbers using Greenlaw Moor SSSI and Hule Moss Ramsar site quoted in the respective citations are obsolete. If the 3 to 6% of the British winter population figure is still valid, 14,000 to 28,000 birds use Hule Moss as a roost site.

During the day the geese fly out to feeding locations in the surrounding countryside and coast. They return at dusk in flocks numbering many thousands to roost on and around Hule Moss.

Hule Moss lochan is approximately 3.8km (2.4 miles) from the centre of the Lees Hill development site. Birds flying to and from their feeding areas overfly the development site.

Wood et al (2020) record that research conducted by Wildfowl and Wetland Trust staff, calculates predicted collision mortality of pink footed geese (nationally, per winter season) caused by interaction with wind turbines (including offshore turbines which are rarely encountered) and associated overhead power cables. Their methods use 'avoidance rates', meaning the percentage of geese successfully flying through a landscape containing turbines and cables without being killed.

Scottish Natural Heritage (as they then were) recommended avoidance rate for this species is 99.8%. Using 99.8% avoidance rate Wood et al (2020) predicted that around 100 geese would be killed by wind turbines, and almost 700 killed by collision with cables.

Not all stake holders recognise a 99.8% avoidance rate. So other rates were also calculated. A 95% avoidance rate increases predicted mortality to around 2,300 killed by turbines and 16,600 by collisions with cables.

They conclude by saying;

> *"The careful siting of any such new energy infrastructure outside of known flight paths and migration routes would reduce these impacts further."*

Clearly, placing six 200m turbines and the associated cables so close to a major roost site, with tens of thousands of birds overflying the development daily, all winter long, is failing to heed that advice. Should the Lees Hill development go ahead, collision mortality for the Hule Moss geese can reasonably be expected to be well above the national figures calculated by Wood et al (2020).

Anne Brown, for NatureScot (as they are now called), in her response to the EIAR, raises concern that the predicted collision mortality rates for breeding wading birds are deemed to be "not significant".

The figures conflict with the most recent survey data for the Greenlaw Moor SSSI that NatureScot have. These suggest the mortality rates would be “worryingly high” if they pertained to SSSI breeding birds (NatureScot (2024)). Equally, there must be concerns regarding the potential mortality rates for the overwintering pink footed geese, given the size of the flocks and the repeated daily flights.

Ecology

As birds are part of the ecology of any ecosystem, separating ornithology and ecology is presumably an administrative expedient for the circumstances of this type of application.

A project as large as that proposed for Lees Hill, which involves the construction of roads and other infrastructure, and the digging of very large pits for turbine foundations, cannot be undertaken without damaging the ecosystem that it is built in. Plants and animals will be disturbed and killed. Habitat will be lost. The construction of a ground mounted solar photo voltaic (PV) array covering almost 70 hectares also cannot be undertaken without changing the suite of plants and animals that are there now for something different. That may also be considered damage.

However, NatureScot accept that with the governance of an Environmental Clerk of Works (ECoW), strict adherence to a Construction Methods Statement (CMS), and the implementation of a Construction and Environmental Management Plan (CEMP), and relevant Species Protection Plans (SPPs), the work can be done with the minimum of damage and disturbance. Although some degree of displacement, as for birds, must be expected, especially during the construction phase.

The effects on ecology after construction of large solar PV arrays produce positive and negative effects for the organisms living around and under them. Under the panels, drier conditions with more shade prevail. This encourages a particular mix of vegetation which in turn attracts particular invertebrates. Between banks of panels (in the gaps between rows of panels) full sun and rain create conditions that favour different plants and animals. This ‘habitat fragmentation’ is considered advantageous to biodiversity because the mix of microclimates and organism assemblages attract a variety of higher organisms (Uldrijan et al (2022)).

Montag et al (2016) found that plant and invertebrate biodiversity within solar arrays can be greater than at control sites without solar PV panels.

Because of the man-made structures present in the ecosystem though, some animals cannot make full use of the opportunities the biodiversity presents.

Skylarks forage on land around solar panels, but are reluctant to nest there.

The situation is complicated further in the case of Lees hill because above the panels the turbine blades will be turning. In which case all of the negative implications of collision mortality and displacement pertain, discouraging birds and animals from making use of the greater biodiversity around the solar PV panels.

It is noteworthy that the research by Montag et al (2016) was joint funded by six renewable energy companies.

Heat Island Effect

Large solar PV arrays change the albedo (reflectivity in respect of incoming solar energy), vegetation, and structure of the terrain they are built on. During the early period of construction of large ground mounted solar PV arrays, it was believed that the arrays resulted in cooler temperatures in the immediate vicinity. More recent empirical investigations have indicated that the temperatures around large solar PV arrays are actually higher than surrounding ground surface and air temperatures. Barron-Gafford et al (2016) found that, at night, air temperatures above solar PV arrays were regularly 3–4 °C warmer than in areas without solar PV panels. The contention being that because solar PV panels are dark in colour, energy from the sun is absorbed, stored, and reradiated.

Xie et al (2024) also examined the effect of solar PV 'farms' on temperatures. They found that land surface temperature difference (LSTD, the difference between before the solar PV arrays were built and after they were built) was +3.35°C in spring and summer and +2.5°C in autumn and winter.

On a large scale this warming effect means that the 'energy payback' time of solar PV systems is increased substantially (they do harm to the climate for longer, before they start doing good).

The heat island effect mentioned above may be relevant to the watercourses running through the Lees Hill development area, then on into the Blackadder Water, part of the Tweed catchment system. A special area of conservation (SAC) (JNCC (no date)) for Atlantic salmon (*Salmo salar*) is the species that is the primary reason for selection of this site for SAC designation.

The NatureScot response to the EIAR mentions in Appendix 1 that young salmonid fish were found in Foul Burn within the development site. It also mentions water quality, river flow, and channel form and substrate, in respect of the welfare of organisms living in the watercourses flowing through the development site.

However, what is not mentioned is water temperature.

Moore et al (2012) states;

> *"Freshwater temperature is more likely to impact salmonid biology than flow, particularly in relation to temperature dependent metabolic costs, time of spawning and fecundity. Therefore, temperature may be more of a factor regulating salmonid populations in fresh water than flow itself."*

Atlantic Salmon, and Brown Trout (*Salmo trutta*) are highly sensitive to water temperature at all of their life stages. Water temperature determines spawning time, and the survival and development of eggs, juveniles and adults.

Moore et al (2012) further state that temperature;

> *"... also has a direct effect on the survival and development of eggs, juveniles and adults. The metabolic rate, growth or oxygen supply, as well as many other vital physiological processes, depend on the ambient temperature. Temperature and the ionic environment, among other factors, are particularly important for the* ***duration and quality of egg maturation*** *and thus, for the reproductive success of salmonids"*

Higher water temperatures cause salmon embryos' metabolic rate to increase. That causes them to use up their food reserves more quickly and the eggs hatch earlier (Smialek et al (2021)). The same stresses act on alevins (newly hatched salmon feeding on attached yolk sac). This early hatching may

mean that they emerge into conditions unfavourable for further growth and development (Rooke et al (2019)). Food sources they need may not yet be available. This is a concept called 'phenological asynchrony' and is further described by Thorstad et al (2021) as follows;

> *"Water temperatures in many rivers are expected to periodically exceed the upper thermal tolerance limit for salmonids, and during the summer many populations are already encountering water temperatures near or exceeding laboratory-derived lethal limits."*

and

> *"During spawning, eggs are laid in the gravel, and the timing of hatching and the rate at which fry consume the nutrients from the yolk sack before emerging is controlled by water temperature. With increased water temperatures, this process will be more rapid, leading to earlier fry emergence and possibly to a disconnect between the timing of fry emergence and food availability."*

It is an accepted fact that temperatures in all seasons in the UK are rising due to climate change. That is already elevating water temperatures in salmon spawning streams as indicated by Thorstad et al (2021). If the water, falling as rain on land within the Lees Hill solar PV array then flowing through watercourses running through the Lees Hill solar PV array is subjected to ambient temperatures between 2.5 and 4 °C higher than outwith the solar PV array (as described in Barron-Gafford (2016) and Xie et al (2024)), it is reasonable to propound that the temperature of the water in those watercourses will be warmed beyond that of similar spawning streams outwith the solar PV array.

Those elevated temperatures could be detrimental to the spawning success of salmonids in the Lees Hill area of the Tweed SAC catchment.

Interim submission

It is undeniable that what is proposed for Lees Hill Renewable Energy Park is a very large-scale alteration to a landscape previously used only for agriculture and by animals, birds, and plants, as habitat. Six 200 metre tall wind turbines would bring major changes to any landscape. Habitat will be lost or changed. Other parts of that habitat will remain, but birds in particular will be displaced from it, and potentially killed attempting to navigate through it.

Any ecological benefits accrued from mitigation management of its almost 70 hectares of solar PV array would be largely negated in respect of the bird species of the most acute conservation concern (waders and raptors) by turbine blades spinning above the array.

The proposed development's close proximity to a large area of land subject to conservation protection designations (Greenlaw Moor SSSI, and Hule Moss 'Ramsar' site) provides grounds for further legitimate concerns. These areas are designated with the intention of protecting the ecosystems and the taxa that are their ecosystem components. Wind turbines erected in the flight paths of birds transiting to and from the protected areas would contradict the aims of their designation and subject birds already suffering declines to additional risks

The heat island effect of a large solar PV array on the temperature of water in watercourses flowing through the development site and on into the River Tweed SAC has not been tested by science, but is

forwarded for consideration on grounds of simple logic, because of the ecological and economic status of Tweed salmon in the Borders area.

The construction of 200m wind turbines, a 70ha solar PV array and the ancillary infrastructure subject of the Lees Hill application would be detrimental to the welfare of organisms, particularly birds, living in the immediate vicinity and the surrounding area. When so many of those organisms are already suffering population declines and habitat loss, allowing its construction would constitute a grave ecological loss.

10 OVERALL CONCLUSIONS

- There is no apparent or proven need for this proposal.
- This proposal represents the very antithesis of the key mantra contained in NPF4, namely that of the '*right development in the right place*'. It is, rather, an application born of landowner and developers' commercial expediency.
- The proposal is significantly contrary to the criteria set out in NPF 4 Policy 11 e) and Scottish Borders' LDP 2.
- A significant two-pronged objection by the Ministry of Defence remains in place. No attempts have been made to remove it or mitigate the reasons for the objection.
- The EIA is significantly deficient in a number of respects and is unfit for purpose to the point where it may properly be described as unlawful.
- Landscape and visual impacts have been under assessed in the EIAR with the consequence that the impact of the proposal on landscape, neighbours and neighbouring communities have been diluted to a point of triviality. Affected communities include those of Duns, Gavinton, Polwarth and Westruther.
- The landscape and visual impacts of the proposal will be significantly adverse from all four points of the compass. Evaluated independently by an experienced landscape architect, they are seen to be grotesquely larger and dominant over a wide area. When coupled with a large area of solar panels and a BESS installation, this development can be seen in no other light but that it is entirely inappropriate for this location,
- The risks associated with the elements of this proposal are either ignored or under evaluated. In the implementation of every one of the required and important safety duties the Applicant has evidently failed.
- The choice of this site crossed by a major gas pipeline is foolhardy, and significantly increases both apparent and latent serious risks.
- To further the ambitions of NPF 4 and to further SG's aspirations for the growth of renewable generation in *appropriate locations*, the applicant must consider its public interest duty to consider co-locating its solar plant and battery storage facilities in existing locations such as Crystal Rig where they have established connection facilities. It has not done so.
- The risks associated with the proposal and the major hazard pipeline have been under assessed, and in any event are in conflict with the guidance published by the UK Pipeline Operators Association.
- Properly understood, the net economic benefit of this proposal is negligible. It cannot in all honesty be described as positive in any respect.
- The ornithological and ecological concerns are significant and adverse. The impact on protected species and protected locations are far-reaching and adverse.

- In the absence of preventive measures, compensatory measures of restoration carried out elsewhere, or proposals to shelter and foster the existing bird populations and the protective measures in the vicinity of the proposal, the Applicant should reconsider its chosen location.

DLH accordingly submits that for all these reasons this application should be refused.

JOHN CAMPBELL KC
for Duns Lees Hill SOS
23 October 2024

Appendices

1 SAS Pipeline analysis
2 Natural Power Consultants and Fred Olsen Renewables relationship
3 Ms C Anderson's Independent Landscape report
4 Photomontage from the west side of Duns
5 Ornithology and Ecology references

APPENDIX 1

Scotland against Spin (SAS) pipeline analysis

The detailed SAS analysis of October 2024 Wind farm applications can be found at Updated list of Wind Farm Scoping Schemes and Applications – Stephen Lucking – Scotland Against Spin

The summary of this analysis is reproduced below and is followed by a comparison of this updated data with the pipeline analysis produced by BVG for the industry in March 2024.

SAS summary

There are currently **83 schemes*** including Scoping Requests in the system. Those will generate a Scoping Opinion from the ECU. They propose **1482 new turbines** and **additional capacity of 11.07GW**.

Scoping Schemes will "disappear" for only two reasons. One is that the scheme is withdrawn. This rarely happens and some schemes where nothing has happened for years are still active. The other scenario is that the Scoping Request is followed by, and replaced by, a full application.

There are currently **70 applications** at various stages of the process. They propose **1113 new turbines** and **additional capacity of 8.7GW**.

When added to those in Scoping there are 153 s.36 proposals for 2595 new turbines and extra capacity of 19.77GW

Applications can be put into different categories.

39 await a decision from the "relevant Planning Authority" * i.e. the Council on whether to object.

13 have moved to a Public Enquiry (PI). On 9 of these the Reporters have sent reports to SG.

5 schemes are waiting to reach the PI stage after a Council Objection has been lodged

12 schemes have had no Objection lodged and are therefore likely to be consented through by SG adding **166 turbines** and **further capacity of 1.07 GW** to the numbers for consented * schemes.

*Electricity Act 1989, Sch 9

DLH notes:

Scotland's current usage of electricity is	3.7GW (Source: Scottish Energy Statistics 2021)
Scotland's forecast usage in ***2045*** is	7.4GW (Source: Electricity System Operator)

In the 12 months to September 2024 **constraint payments** (i.e payments to switch turbines off) were paid to windfarm operators of:

Onshore	£209.3m
Offshore	£156.3m
Total	£365.6m

DLH comparison of BVG March figures v October submissions in the public domain.

Pipeline analysis				
	BVG Mar-24 MW	% approval req to reach 20GW	**SAS Oct-24** MW	% approval req to reach 20GW
Operational	9,461		9,461	
Under Construction	1,246		1,246	
Consented	6,328		6,328	
sub total approved	**17,035**		**17,035**	
in planning	6,578	45%		
no objection			1,070	
sub total expected approval			18,105	
other S36			7,630	25%
scoping			11,070	
in development*	7,330			
sub total	13,908	21%	18,700	16%
Grand total	**30,943**		**36,805**	
* projects identified by members to Scottish Renewables but may not be in the public domain				

APPENDIX 2

CONSULTANT RELATIONSHIP WITH APPLICANT

Fred Olsen Renewables Limited ownership (1) *"The company is a subsidiary undertaking of Fred. Olsen Renewables A/S (……) a company incorporated in Norway. The ultimate controlling party is* ***Bonheur ASA*** *……"*

Natural Power's ownership. (2) The company states in its published accounts that *"The largest group in which the results of the company are consolidated is that headed by Fred. Dessen & Co Limited …….the company's ultimate parent company, incorporated in England and Wales"*

However this is manifestly not the case as, outlined below, Natural Power is also ultimately owned by Bonheur ASA

Fred Dessen & Co. Ltd does not state in its accounts who its ultimate parent company is (?) However:

- **Mr N.A. Emery** is a director on the board of Bonheur ASA and is listed in their accounts as "*Chairman of the following Fred. Olsen Limited subsidiaries: The Natural Power Consultants Limited ……."* And he is registered at companies house as a director of both Fred Dessen & Co. Ltd and Natural Power Consultants Limited.
- The **Related Parties** note in Fred Dessen and Co Ltd's 2023 accounts states that *"During the year, the Natural Power Consultants Limited and Natural Power Services Limited carried out consultancy and asset management services for Fred Olsen Renewal Group (FOR) relating to the planning and development of windfarms and operations totalling £15,057,955"*(3)

Summarising the relationship from an analysis of the accounts shows:

Natural Power Consultants Limited		Year to December				
		2023	2022	2021	2020	Average over 4 years
Revenue(4)	£000's	25,531	22,192	18,558	16,707	
Fred Olsen Spend(5)	£000's	15,058	13,733	9,226	12,136	
Natural Power reliance on Fred Olsen	***% of turnover***	***59%***	***62%***	***50%***	***73%***	**61%**

Sources

1) Fred Olsen Renewables Limited published accounts to December 2023.
2) Natural Power Consultants Ltd published accounts to December 2023, Note: Natural Power Services Ltd is a subsidiary of Natural Power Consultants Ltd
3) Fred. Dessen and Company Limited published accounts for the year to December 2023.
4) NP revenue is from its published accounts to the relevant year end.
5) Fred Olsen spend is from the Fred Dessen published accounts for the relevant year.

Appendix 3

Lees Hill Wind Farm Proposal - Landscape and Visual Appraisal

Commissioned by Duns Lees Hill SOS (third party objectors)

Carol Anderson Landscape Associates

May 2024

1 Introduction

1.1 This appraisal of the landscape and visual effects of the proposed Lees Hill Renewable Energy Park has been prepared by Carol Anderson, CMLI, consultant landscape architect. It is based on a review of the Environmental Impact Assessment Report (EIAR) and associated documents and visits to the proposed wind farm site and the surrounding area. This appraisal focuses on identifying the principal landscape and visual effects of the proposed development. It does not provide an alternative detailed Landscape and Visual Impact Assessment as would be included in an EIAR.

1.2 Appendix A provides a summary of the relevant experience of the author.

2 The proposed development

2.1 The proposed development would comprise 6 wind turbines, up to 200m high to blade tip, 69 hectares of solar generation ground mounted panels and a 'containerised' battery energy storage system covering 0.5 hectares. The development would be located approximately 5km west of Duns on south sloping farmland lying between the B6456 and the unclassified Duns to Longformacus road.

2.2 Ancillary development would include access tracks, borrow pits and a substation. Chapter 4 of the EIAR (paragraph 4.6.6) describes the transformer housing as being external to each wind turbine although paragraph 6.6.3 of Chapter 6 states that it would be internal. It is assumed that security fencing would be erected around the solar array, and possibly also around the battery storage facility, although this is not specifically described in Chapter 4 of the EIAR. Visible aviation lighting will be fitted to the nacelles of three of the proposed wind turbines.

3 The information provided by the applicant

3.1 The Landscape and Visual Impact Assessment (LVIA) set out in Chapter 6 of the EIAR complies with the Landscape Institute's Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA). I am in agreement with the majority of the findings on landscape and visual effects in the LVIA and consider the assessment to be reasonably robust in its findings. However, the conclusions reached in section 6.8 of the LVIA appear excessibly weighted towards taking a positive stance on the proposal, straying from impartiality to providing more active support. This is particularly evident in paragraphs 6.6.8 and 6.6.10 where a view is expressed that the extent of significant landscape and visual effects is considered to be "contained" given the scale of the development proposed.

3.2 The day-time visualisations accord with best practice guidance and appear to present an accurate representation of the proposed development. Night-time visualisations have been produced from four viewpoints. My experience of reviewing a range of night-time visualisations and observing visible aviation lighting affixed to wind turbines and other lighting sources during darkness, leads me to express caution on the use of these

visualisations as they cannot replicate the brightness of such lights seen in rural contexts. There are few wind turbines constructed with similar lighting (with all the proposed mitigation installed) in Scotland to allow reasoned judgements to be made on the likely magnitude of effects. The Reporter at the recent Narachan wind farm inquiry (WIN-130-6, see https://www.dpea.scotland.gov.uk/CaseDetails.aspx?ID=122558) held in 2023 expressed a similar view about treating night-time visualisations with caution (Report, paras 54-89 for a full discussion).

4 The design of the proposal

4.1 The site selection and design process undertaken by the applicant is described in Chapter 3 of the EIAR and in the Design Statement. While the proposed development is not located in a designated landscape, it lies close to the Lammermuir Hills Special Landscape Area. I consider that the proposed development site lies in a sensitive landscape at the transition between the well-settled farmed lowlands of the Merse and the Lammermuir Hills.

4.2 Paragraph 3.5.24 of the EIAR states that the aim has been to minimise landscape and visual effects. The selection of the proposed development site appears contrary to this aim. It is impossible to minimise landscape and visual effects given the openness of the site and its proximity to settlement, and the scale and complexity of the development proposed.

4.3 More specific design strategy "principles" are listed in paragraph 3.7.8 and include the following factors relating to landscape and visual interests:

- '*To provide a turbine, solar and BESS layout with simple form, which reflects the scale of and relates to the landscape character of the Proposed Development and its surroundings'*
- *To avoid an overly complex and visually confusing layout'*
- *To achieve a balanced composition of the turbines against the landscape and skyline from key viewpoint locations'*
- *To give due consideration to turbine proportions*
- *To reflect the pattern of nearby existing and proposed wind farms as far as practical.'*

4.4 It is assumed that the word 'site' is missing after 'Proposed Development' in the first bullet point set out above. I consider that the proposal, which comprises six wind turbines, 200m high to blade tip, an extensive solar array and other ancillary built development including large containers, would not relate either to the scale or to the character of the development site and its surroundings. This is presently a landscape which is farmed and also embraces some remnant moorland. The scale of the landscape is large to medium in the vicinity of the proposed development site with this influenced by the undulating landform, the presence of settlement, field patterns and woodlands. Where the landscape is more open, for example within the moors and mosses lying in the west of the development site, scale is increased but these moorlands are not extensive and are fringed by nearby smaller scale fields, woodlands and settlement. The landscape is

additionally punctuated by the Dirrington Laws, relatively small but prominent hills which provide ready scale references.

4.5 The proposed development comprises a wide variety of infrastructure including solar arrays, BESS, wind turbines (potentially with external transformers which presents a less streamlined appearance) a substation and other ancillary development including visible tracks. Security fencing, which is usually a requirement around solar arrays, may also be installed although this is not mentioned in Chapter 4 of the EIAR. The principle of avoiding '*an overly complex and visually confusing layout'* is therefore very difficult, if not impossible, to achieve given the disparate nature of the built development proposed and also its contrast with the character of the surrounding landscape. The openness of the proposed development site, and the presence of close and elevated views from roads and settlement, increases sensitivity. The plethora of built components will lead to substantial clutter and visual confusion.

4.6 Solar arrays are a feature of many recent wind farm proposals in Scotland. However, these proposals are predominantly sited in upland landscapes, distant from settlements and roads and in areas where landform and forestry can provide screening from wider views. Operational and recent proposals for solar farms across the UK are commonly located in lowland areas and particularly in farmed landscapes where hedgerows, woodlands and field trees provide low level screening. This proposal differs in being located on a very open site close to settlement, roads and walking routes where there is little scope for screening. I am therefore of the view that the selection of this site for such a development is inappropriate and goes against generally accepted good practice in siting and design for solar development.

4.7 While it is accepted that the wind turbines achieve a '*balanced composition'* this is not a difficult task given that there are six proposed. However, I consider that while this principle has largely been achieved, it is a minor consideration in terms of the major intrusion associated with locating turbines of this size in this landscape context. The meaning of the principle of providing '*due consideration to turbine proportions'* is not clear and the Design Statement and LVIA provides no further clarification of what this might entail. It could relate to considerations of turbine size or potentially just consideration of the relative proportion of turbine blades to tower. Whatever the aims of this "principle", it is apparent that the landscape consultants have had no influence either in the selection of the site or in the determination of an appropriate scale of development (both in terms of wind turbine size and the extent of the solar array).

4.8 In terms of the design "principle" of reflecting the pattern of existing and proposed wind farms, the proposal would lie on the southern fringes of the Lammermuir Hills and would straddle two Landscape Character Types (LCTs), the *Upland Fringe with Prominent Hills* (102) and the *Upland Fringe Moorland with Hills* (105). The operational Black Hill wind farm, which comprises 22 turbines, 78m high, lies within LCT 102. Wind farms with substantially larger turbines are principally associated with the simpler and more expansive upland plateaux within the higher Lammermuir Hills. These are better able to

accommodate this height and extent of wind turbine development. The location and scale of the turbines in relation to the site and its immediate landscape context is an important aspect which has not been addressed in the siting and design strategy.

5 Guidance in relation to landscape and visual matters

5.1 The *2016 Scottish Borders Council Update of Wind Energy Landscape Capacity and Cumulative Impact Study* (hereafter called the 'capacity study') provides strategic information and guidance on wind energy development. While this study does not fully comply with revised guidance on landscape sensitivity assessment issued by NatureScot in 2022, it nonetheless provides useful strategic guidance on landscape sensitivity.

5.2 The LCTs which formed the basis for the sensitivity assessment in this study are based on an earlier landscape character classification. The proposal straddles two LCTs considered in the capacity study, the *Grassland with Hills* and the *Upland Fringe Moorland*. It should be noted that the 2019 NatureScot classification of landscape character adopts the same landscape character boundaries and much of the original description but has renamed the LCTs to fit with a national nomenclature system. The *Upland Fringe with Prominent Hills* LCT (102) is synonymous with the *Grassland with Hills* LCT and the *Upland Fringe Moorland with Hills* LCT (105) is synonymous with the *Upland Fringe Moorland* LCT considered in the 2016 capacity study.

5.3 The analysis of the character of the *Upland Fringe Moorland* LCT defines the large scale but limited extent of this landscape, its widespread visibility and the distinctive and prominent Dirrington Law hills. The guidance on capacity in Table 6.1 concludes that there is very limited capacity for development on and around the Dirrington Laws due to their distinctive, smooth-sided profile and limited height. It concludes that turbines up to 50m high only could be sited in association with surrounding farms.

5.4 The study concludes that there is limited capacity to accommodate wind turbines below 80m high to blade tip in the *Grassland with Hills* LCT with no capacity having been defined for wind turbines above this height in this LCT (Figures 6.1 c-e). The presence of the operational Black Hill wind farm is defined as a key factor limiting capacity for additional wind energy development in the *Grassland with Hills* LCT. Individual or small groups of turbines up to 50m are noted in Table 6.1(ii) of the study as being likely to be more easily accommodated in this LCT.

6 Effects on landscape character

6.1 Five wind turbines and part of the solar array would be sited in the *Upland Fringe Moorland with Hills* LCT and a single wind turbine, and a greater extent of the solar array, would be sited in the *Upland Fringe with Prominent Hills* LCT.

6.2 I agree with the LVIA that the proposal would incur significant adverse effects on the *Upland Fringe Moorland with Hills* LCT 105. One of the principal effects of the proposed development on the character of this LCT would be the imposition of large turbines, diminishing the sense of expansive and uncluttered space which provides the wider

setting to the distinctive steep-sided Dirrington Laws which dramatically outcrop from lower-lying moorland. These effects on character are illustrated in Viewpoints 1, 2, 3, 7, 14 and 16, with viewpoints 14 and 16 particularly demonstrating the diminution of the apparent vertical scale of the Laws due to the size and proximity of the turbines. I consider that effects on this landscape would be major and adverse given the substantial contrasts in scale between the proposed turbines and the Dirrington Laws. The turbines would overwhelm the size, prominence and setting of the Laws. The limited extent of this moorland landscape and the perception of openness, space and relative naturalness would be significantly altered by the very large/extensive built infrastructure of the development proposal. NatureScot's 2019 landscape character classification describes this LCT as being unique in the region and dramatic with a well-defined visual identity. These qualities would be severely affected by this proposal.

6.3 Significant adverse effects would also occur on the *Upland Fringe with Prominent Hills* LCT and I consider that these would also be of major significance due to the incompatibility of very tall/extensive built infrastructure with key characteristics. This landscape has a varied landform and although the proposal is located on simpler, gently sloping farmland, this area is not extensive and lies close to more diverse and prominent small hills including the nearby Raecleugh Head and Knock Hill/Langton Edge. The proposed 200m high turbines would dominate the relief of these hills and adversely affect the sense of expansiveness as well as the perception of timelessness associated with features such as the hill forts on Raecleugh Head.

6.4 In terms of strategic landscape effects, the location of a development of this scale and nature in a landscape which is transitional in character is inappropriate. This landscape is unlike the more extensive, simple and larger scale upland plateaux of the Lammermuirs, which can accommodate large wind turbines while minimising effects on landscape character. It has some smaller scale features, a greater degree of diversity, including some small but pronounced landmark hills, and is quite different to the more subtle and expansive basins accommodating the Crystal Rig and Fallago Rig wind farms (which comprise turbines of between 100m and 145m high).

7 Effects on designated landscapes

7.1 The Lammermuir Hills Special Landscape Area (SLA) borders the western boundary of the proposed development site. This SLA is one of nine regionally important landscapes identified across the Scottish Borders following a review undertaken by LUC in 2012. The Designation Statement for this SLA describes the following key qualities of this landscape as:

- The largest area of moorland in the Borders with remote, wild qualities, despite its managed nature.
- The extent and uninterrupted openness of the landscape which lend scenic value.
- The unique landscape features of the striking conical Dirrington Laws

- The visual foreground provided to the Lammermuir Plateau by the upper Whiteadder valley.
- The more intricate landscape that occurs to the east around Abbey St Bathans and the incised cleughs of the Monynut valley (noting that forestry and wind turbines are prominent around the valley of the Bothwell Water).
- The popularity of the area for recreation, with the Southern Upland Way passing through the area.

7.2 The LVIA concludes that while significant effects would occur across the south-eastern part of this SLA (which principally comprises effects on the quality relating to the unique landscape features of the Dirrington Laws) this is a small part of this extensive SLA and the integrity of the designation would not be undermined (EIAR paragraph 6.6.60 and Technical Appendix 6.3).

7.3 I am in agreement with the LVIA that the key quality '*The unique landscape features of the striking conical Dirrington Laws* would be principally affected by the proposal. The siting of 200m high wind turbines close to these distinctive hills would significantly diminish their prominence and setting, as explained in section 6 of this appraisal. I do **not** agree that the integrity of the SLA would not be undermined due to the nature and severity of these effects.

8 Visual effects

8.1 I am largely in agreement with the findings of the LVIA in respect of significant effects on views. 23 representative viewpoints have been selected and these principally focus on views within approximately 5km of the proposed development. The LVIA finds that significant effects would occur on 18 of the selected viewpoints and with eight of these effects being major and thus of the highest degree of magnitude. The location of the proposed development site within the southern fringes of the Lammermuir Hills increases visual sensitivity because of its proximity to settlement, roads and recreational routes. The openness and high visibility of Greenlaw Common/Inch Moor in the west and the elevation of the minor road between Duns and Longformacus are particular sensitivities.

8.2 In terms of close views, I agree with the LVIA that significant adverse effects would occur from the B6456 and the minor road between Duns and Longformacus. Both these routes offer exhilaratingly expansive views across the upland fringes to the Merse and distant Eildon and Cheviot Hills. Elevated views from the Longformacus road would offer a 'bird's eye view' looking down on the proposed solar array and close views of the turbines (their huge size appreciated in relation to the relatively small farm buildings of Langtonlees). Viewpoints 1 and 2 illustrate the major significant and adverse effects on these views.

8.3 Views from the B6456 will be similarly close and severely affected. The openness and expansiveness of the Inch Moor and dramatic presence of the Dirrington Laws is a special feature experienced from this route. Viewpoints 7 and 8 illustrate these effects and similar views would be gained by walkers and cyclists accessing moorland tracks to Dirrington Great Law.

8.4 While views from the promoted walk to Duns along Langton Edge would be screened by dense woodland (assuming the woodland comprises a long-term retention), open and very close views to the proposal will occur from Raecleugh Head where informal paths provide access to the three Scheduled Hill Forts which make a strong contribution to the character of the scene. The proposed turbines will interrupt and detract from views to the Dirrington Laws in this view as can be seen in the visualisation from Viewpoint 3.

8.5 Visible aviation lighting on 3 of the 6 turbines will extend the duration of significant adverse effects, principally affecting close-by and elevated views from nearby residential properties and from roads.

9 Effects on nearby residential properties

9.1 The Residential Visual Amenity Assessment (RVAA) in EIAR Technical Appendix 6.6 considers effects on visual amenity of 24 properties lying within 2.5km of the proposal. These properties have been organised into 13 individual properties/groups of properties for the purposes of the assessment. The RVAA finds that a high magnitude of change would occur on just four individual properties/groups of properties, namely Old Langtonlees, Langtonlees Farm, Langtonlees Cottages and Dronshiel. The RVAA concludes that none of these properties would reach the Residential Visual Amenity Threshold whereby the effects of the proposal would be overbearing. I have considered the effects of the proposal on the visual amenity experienced from Old Langtonlees in a separate report.

10 Cumulative effects with other consented and proposed wind farms

10.1 There would be limited intervisibility between the operational Black Hill wind farm and the proposal although both would be seen from the summit of Dirrington Great Law and sequentially from the minor road between Duns and Longformacus. In these views the 78m high Black Hill turbines would be obviously much smaller than the 200m high turbines of the proposal with perspective playing no role in mitigating contrasts of scale.

10.2 The Crystal Rig 4 extension is the only consented (but not yet built) wind farm development lying within 20km of the proposed development. I consider that this would not incur significant cumulative effects with the proposed development due to the distances between the two. The Crystal Rig 4 development will additionally be seen in the context of a large array of operational turbines, lessening its effect.

10.3 Figure 6.9 in the EIAR shows operational, consented, application and scoping stage wind farms. The cumulative context is however rapidly changing, and this figure is out of date in that the Longcroft and Newlands Hill proposals are now at application stage, not at scoping as shown on this figure. The extent of wind farm development proposed in the Lammermuir Hills and in some cases on the fringes of these hills would, if consented, radically change the character of these uplands and surrounding landscapes. The proposed Newlands Hill wind farm lies in East Lothian, some 16km from the proposed development. While there would be limited intervisibility between the proposal and the Newlands Hill wind farm, both developments comprise turbines 200m high located on the

lower fringes of the Lammermuir Hills. This association of very large turbines with more lowland landscapes would exacerbate the departure from the established pattern of very large turbines being located within upland areas. Other cumulative effects with application stage wind farms would occur on views from key hills, the Southern Upland Way and from roads, especially the minor roads which cross the Lammermuir Hills and which are well-used by both motorists and cyclists.

11 Conclusions

11.1 The proposal would be associated with the lower transitional landscape between the settled farmlands of the Merse and the Lammermuir Hills. It would comprise a complex development of very large wind turbines, extensive solar array and other ancillary development located on an open site close to roads and settlement. It would contrast with the established association of wind farm development with the more extensive and sparsely settled uplands of the Lammermuir Plateau.

11.2 Significant and major adverse effects would occur on the *Upland Fringe with Prominent Hills* and the *Upland Fringe Moorland with Hills* LCTs. It would also have significant adverse effects on a key quality of the adjacent Lammermuir Hills SLA. Significant adverse effects would occur on key views with many of these effects being of major significance within approximately 5km of the proposed development site. These include views from residential properties lying close to the proposal.

11.3 The disparate and complex nature of the development, its lowland context and the openness of the site in views across moorland and from surrounding ridges and hills contribute to the severity of landscape and visual effects. This proposal is not the right development in the right place, and I consider that the degree of severity of effects on landscape character and on views reflects the inappropriateness of the location of this proposal.

Annex A: Experience of the author

Carol Anderson is a landscape architect and Chartered Member of the Landscape Institute (CMLI). She has previously worked for local authorities, the Forestry Commission and in private practice. She set up her own landscape consultancy, based in Edinburgh, in 2001.

She has extensive experience in landscape character assessment and in landscape sensitivity assessment for wind energy development, settlement expansion and woodland creation across the UK. She works on a consultancy basis for local authorities and the Cairngorms National Park and her practice is one of the selected consultancies engaged by NatureScot to provide specialist advice on landscape and visual matters. This has principally involved the review of development proposals although she has also worked on many projects funded or co-funded by NatureScot. These have included review of landscape character assessments, drafting guidance for coastal character assessment and input to guidance on landscape sensitivity assessment.

Selected examples of relevant work include:

- **Wind Energy landscape sensitivity studies**
  Lead consultant on studies considering landscape and visual sensitivity in relation to wind energy development including those for Argyll and Bute, the Ayrshire Councils, Dumfries and Galloway, Moray Council areas and a pilot sensitivity assessment testing new guidance in Highland Council commissioned by NatureScot. Currently part of a team preparing siting and design guidance for renewable energy for Devon including wind, solar and battery storage systems.

- **Windfarm Appeals**
  Expert landscape witness at wind farm inquiries including those for the Dulater Hill, Upper Sonachan, Glenshero, Clauchrie and Earraghail wind farms for NatureScot; the Faw Side wind farm for Dumfries and Galloway Council and the Sheirdrim wind farm for Argyll and Bute Council.

- **Landscape and Visual Impact Assessment (LVIA)**
  LVIA work has focussed on aquaculture, hydro schemes and forestry proposals although, prior to setting up her own practice, she was involved with the design and assessment of wind energy proposals and high voltage electricity transmission lines.

- **Local landscape designation reviews**
  Lead consultant of local landscape designation reviews for local authorities including studies undertaken for Midlothian, Moray, South Ayrshire and North Ayrshire Councils. Also currently involved as part of a team considering a new Area of Outstanding Natural Beauty (AONB) designation in England and reviewing landscape designations on the Isle of Man.

Photomontage ~ Lees Hill windfarm. (proposed) Viewpoint 'Longfield Road, Duns' 378446E 653395N Alt 125m Camera: Canon EOS 5D MkII Lens: Canon 50mm F/1.4
Horizontal field of view: 53.5° (planar projection) Direction of view: 264° Camera height 1.5m Photography date:3/06/2023
Application 6 Turbine Layout. Closest turbine (#5) 5956m
Correct printed image size: 820 x 260mm Paper size: 841 x 297mm (1/2 A1)

APPENDIX 5

Ornithology and Ecology references

THE Ornithology and Ecology sections were prepared by John Connor. His relevant experience is: BSc (Hons) Environmental studies and biological science. Breeding bird and waterway breeding bird surveyor for the British Trust for Ornithology (BTO). Breeding bird survey location is in the Lammermuir Hills. Trainee bird ringer under licence from BTO. Lifelong amateur ornithologist.

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