

Written Representation: Climate Change, Greenhouse Gas Assessment and Sustainability

THE PLANNING ACT 2008

THE INFRASTRUCTURE PLANNING (EXAMINATION PROCEDURE) RULES 2010

THE DROVES SOLAR FARM

Planning Inspectorate Reference: EN0110013

Applicant: The Drovers Solar Farm Limited

Interested Party Name: Sharron Morgan

Interested Party Registration / Reference Number: [REDACTED]

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1. Introduction

1.1 This submission is made by Sharron Morgan as an Interested Party Reference: [REDACTED] in respect of the application by The Drovers Solar Farm Limited for a Development Consent Order (DCO) for The Drovers Solar Farm (Planning Inspectorate Reference EN0110013), comprising a solar photovoltaic generating station, Battery Energy Storage System (BESS) and associated grid connection infrastructure located north of Swaffham and south of Castle Acre, West Norfolk.

1.2 Having reviewed Chapter 13 (Climate Change) of the Environmental Statement, together with the associated Greenhouse Gas (GHG) assessment methodology, this Interested Party respectfully submits the following written questions and observations for consideration by the Examining Authority. It is requested that the Applicant be invited to provide a written response to each matter raised.

1.3 Whilst the Environmental Statement follows recognised guidance, it is submitted that a number of the assumptions underpinning the GHG assessment require further explanation in order for the Examining Authority to be satisfied that the Scheme is consistent with, and will make the contribution claimed towards, the United Kingdom's legally binding Net Zero obligations under the Climate Change Act 2008 (as amended).

2. Section A – Grid Connection and Carbon Benefits

Question A1

The Environmental Statement assumes the Scheme will become operational during 2033. The Applicant is asked to confirm:

- a. the date used within the GHG calculations for first electricity export;
- b. whether the calculations assume unrestricted export from commissioning onwards; and
- c. whether any allowance has been made for delayed energisation resulting from National Grid transmission constraints or connection queue reform.

Question A2

Given the well-documented transmission constraints affecting East Anglia, has the Applicant undertaken any sensitivity assessment based upon:

- a. a 2-year grid connection delay;
- b. a 5-year grid connection delay;
- c. staged energisation;
- d. temporary export restrictions; or
- e. reduced export capacity?

If so, the revised carbon payback period and lifetime GHG savings under each scenario are requested. If not, an explanation is sought as to why such scenarios have not been assessed.

Question A3

The Applicant is asked to provide the calculated carbon payback period for the Scheme, showing:

- a. construction emissions;
 - b. operational emissions;
 - c. avoided emissions; and
 - d. the year in which cumulative carbon savings are calculated to exceed lifecycle emissions.
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3. Section B – Supply Chain Emissions

Question B1

The Environmental Statement includes embodied carbon figures for photovoltaic modules. The Applicant is asked to identify:

- a. the assumed country of manufacture;
- b. the electricity grid carbon intensity used during manufacture;
- c. the manufacturing database or lifecycle inventory used;
- d. the assumed transport route;
- e. shipping emissions; and
- f. road transport emissions.

Question B2

Has the Applicant undertaken any sensitivity analysis comparing manufacture in China, Europe, or via lower-carbon manufacturing routes, and the effect of each upon lifecycle emissions? If not, an explanation is requested.

Question B3

The Applicant is asked to provide the embodied carbon contribution, expressed in tonnes CO₂e, separately for:

- a. PV modules;
 - b. aluminium frames;
 - c. steel supports;
 - d. transformers;
 - e. inverters;
 - f. battery storage;
 - g. substations;
 - h. underground cables;
 - i. concrete; and
 - j. fencing.
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4. Section C – Battery Energy Storage System

Question C1

The Applicant is asked to confirm:

- a. the battery chemistry assumed;
- b. the expected operational lifespan of the BESS;
- c. the number of battery replacements assumed over the project lifetime; and
- d. the embodied carbon associated with each replacement.

Question C2

The Applicant is asked to provide the evidence base supporting the assumed battery recycling rates, and to confirm whether transport emissions associated with recycling have been included within the assessment.

Question C3

Has any sensitivity analysis been undertaken on the basis that battery replacement may be required earlier than currently anticipated?

5. Section D – Soil Carbon

Question D1

Paragraph 13.7.2 of the Environmental Statement states that, as a conservative approach, baseline agricultural activities have been assumed to generate zero CO₂e. The Applicant is asked to explain:

- a. the basis on which agricultural emissions have been assumed to be zero;
- b. whether existing soil carbon stocks on the Site have been quantified; and
- c. whether projected changes in soil organic carbon have been modelled.

Question D2

The Applicant is asked to provide:

- a. baseline soil carbon storage;
- b. predicted soil carbon following construction;
- c. predicted soil carbon after 10 years of operation;
- d. predicted soil carbon after 30 years of operation; and
- e. predicted soil carbon following decommissioning.

Question D3

The Applicant is asked to confirm whether permanent changes in soil structure arising from driven piles, access tracks and other construction activities have been incorporated into the lifecycle assessment.

6. Section E – Construction Traffic

Question E1

The Applicant is asked to confirm whether the GHG assessment includes emissions arising from imported construction materials, abnormal loads, construction workforce travel, maintenance vehicles, waste removal and excavated soil removal.

Question E2

Where excavated material cannot be reused on Site, the Applicant is asked to provide:

- a. the maximum volume of material requiring export;
- b. the number of HGV movements required;
- c. the haulage distances assumed; and
- d. the additional tonnes of CO₂e generated as a result.

Question E3

Has contaminated soil disposal been assessed as a reasonable worst-case scenario within the GHG and traffic assessments? If not, the Applicant is asked to explain why not.

7. Section F – Green Transport Credentials

Question F1

The Applicant is asked to confirm whether construction contractors will be contractually required to use Euro VI HGVs, HVO renewable diesel, electric construction plant, electric HGVs where available, hydrogen-powered equipment, and anti-idling monitoring.

Question F2

The Applicant is asked to identify any contractual carbon reduction requirements to be imposed upon haulage contractors.

Question F3

Will contractors be required to report actual construction emissions during the construction period, and if so, how will this be secured and monitored?

8. Section G – Climate Assessment Methodology

Question G1

The GHG assessment compares Scheme emissions against forecast future grid carbon intensity. The Applicant is asked to explain how the assessment, and its conclusions, would remain valid should the UK electricity grid decarbonise more rapidly than forecast.

Question G2

The Applicant is asked to provide a sensitivity assessment using: (a) current DESNZ marginal grid emissions factors; (b) an accelerated decarbonisation scenario; and (c) a slower decarbonisation scenario.

9. Section H – Carbon Budgets

Question H1

The Applicant is asked to quantify the percentage contribution of the Scheme's construction emissions against (a) the relevant UK Carbon Budget, and (b) the Electricity Supply Sector Carbon Budget.

Question H2

The Applicant is asked to explain whether delayed energisation of the Scheme would alter its compliance with, or contribution to, those carbon budgets.

10. Section I – Comparative Lifecycle Emissions: Solar, Wind and Small Modular Reactors

10.1 In order to assist the Examining Authority in placing the Scheme's claimed carbon benefits in context, this Interested Party sets out below published comparative data on the lifecycle greenhouse gas intensity and typical capacity (load) factors of solar photovoltaic, onshore and offshore wind, and nuclear generation (including Small Modular Reactors, "SMRs"). The Applicant is invited to confirm whether it agrees with this comparative data and, if not, to provide its own sourced figures.

Question I1 – Lifecycle Greenhouse Gas Intensity

The table below summarises published median/central lifecycle GHG intensity estimates by technology.

Technology	Lifecycle GHG intensity (gCO ₂ e/kWh)	Source basis
Solar PV (utility-scale)	approx. 27–48 (median), with a range of roughly 6–87 depending on module technology, manufacturing location and study vintage	IPCC AR5; harmonised NREL/IPCC literature reviews; UNECE 2021 lifecycle assessment
Onshore wind	approx. 11–12 (median), with most published estimates in	IPCC AR5; UNECE 2021

Technology	Lifecycle GHG intensity (gCO ₂ e/kWh) single figures to the low teens	Source basis
Offshore wind	approx. 12–14 (median)	IPCC AR5; UNECE 2021
Nuclear (large-scale, e.g. Generation III/III+)	approx. 5.5–12 (IPCC/UNECE median), with a wider literature range of roughly 4–110 depending on enrichment method and background grid carbon intensity	IPCC AR5; UNECE 2021; peer-reviewed parametric LCA studies
Small Modular Reactor (SMR), e.g. Westinghouse SMR design	approx. 9.1 (mean), range approx. 5.9–13.2	Peer-reviewed prospective life cycle assessment (Journal of Cleaner Production, 2016)

10.2 The Applicant is asked to confirm whether the module-manufacturing assumptions used in the Scheme's own embodied carbon calculations (see Section B above) fall within, above, or below the published range for solar PV set out above, and to explain any material deviation.

Question I2 – Typical Capacity (Load) Factors

10.3 Lifecycle GHG intensity alone does not capture the amount of usable electricity delivered per unit of installed capacity. The Applicant is asked to confirm the capacity factor assumed for the Scheme and to state how this compares with the following published typical UK figures:

Technology	Typical UK capacity/load factor	Source basis
Solar PV	approx. 9.5–11%	DESNZ / Digest of UK Energy Statistics; Statista analysis of DESNZ data (2024)
Onshore wind	approx. 26–29%	DESNZ Digest of UK Energy Statistics; Energy Numbers analysis
Offshore wind	approx. 38–44%	DESNZ Digest of UK Energy Statistics;

Technology	Typical UK capacity/load factor	Source basis
Nuclear (large-scale)	typically 60–90%, historically higher for a well-maintained fleet, though the UK's ageing fleet has recently operated toward the lower end of this range	Energy Numbers analysis DESNZ Digest of UK Energy Statistics; Committee on Climate Change commentary
SMR (design intent)	designed for baseload operation at capacity factors comparable to large-scale nuclear, subject to demonstration at commercial scale	World Nuclear Association SMR tracker; peer-reviewed SMR LCA literature

10.4 Given the low capacity factor typical of UK solar PV relative to wind and nuclear/SMR generation, the Applicant is asked to confirm how the Scheme's claimed carbon payback period and lifetime GHG savings (see Question A3) account for the comparatively lower annual energy yield per hectare and per MW installed, relative to these alternative low-carbon technologies.

Question I3 – Land Use Intensity

10.5 The Applicant is asked to provide the Scheme's generation output per hectare (MWh/ha/year) and to state how this compares with published land-use intensity figures for onshore and offshore wind and nuclear/SMR generation, in order to assist the Examining Authority in weighing the Scheme's land-take (approximately 840 hectares) against its lifetime generation output.

Question I4 – Status of Comparator Technologies

10.6 The Applicant is asked to confirm whether, in preparing the Environmental Statement, any assessment was made of the relative merits of delivering equivalent low-carbon generation capacity through offshore wind or SMR deployment, and if so, to summarise the conclusions reached. If no such assessment was undertaken, the Applicant is asked to explain why not, noting that the Government's overarching National Policy Statements for energy infrastructure treat solar, wind and nuclear as complementary rather than mutually exclusive means of achieving Net Zero, and that this comparative context may assist the Examining Authority in assessing the necessity and proportionality of the Scheme's land-take.

10.7 For the avoidance of doubt, this Interested Party does not suggest that comparative data of this kind is determinative of whether consent should be granted; the purpose of

raising it is to ensure the Examining Authority has a complete and evidenced picture against which to test the Applicant's own claimed carbon benefits.

11. Section J – Whole-Life Carbon Transparency

The Applicant is asked to provide a full lifecycle carbon table, expressed in tonnes CO₂e, showing separately: manufacturing; shipping; road transport; construction machinery; concrete; steel; aluminium; battery manufacture; maintenance; inverter replacement; battery replacement; decommissioning; recycling; and avoided emissions.

12. Section K – Residual Uncertainty

The Applicant is asked to identify the five largest sources of uncertainty within the greenhouse gas assessment and to quantify the possible variation each could introduce into the final lifecycle emissions figures.

13. Conclusion and Requested Action

13.1 Whilst the Environmental Statement follows recognised guidance, the Applicant's conclusions on the Scheme's climate change benefits appear to depend upon a number of assumptions relating to future grid availability, supply-chain emissions, construction logistics, and soil carbon dynamics. The comparative technology data set out in Section I above is intended to assist the Examining Authority in testing those conclusions against the wider evidence base for low-carbon generation technologies.

13.2 This Interested Party respectfully requests that the Examining Authority require the Applicant to provide full and evidenced written responses to the questions set out above, whether by way of a formal Examining Authority's Written Question or otherwise, so as to enable the robustness of the Scheme's claimed contribution to Net Zero to be tested under realistic delivery scenarios, including potential delays associated with transmission constraints.

13.3 This Interested Party reserves the right to submit further written representations, and to comment on the Applicant's responses, at subsequent deadlines in the Examination timetable.

Signed: Sharron Morgan

Date: 22 July 2026

Annex: Procedural Questions to the Examining Authority

This Annex sets out procedural matters on which this Interested Party would be grateful for the guidance of the Examining Authority / Planning Inspectorate Case Team. These are distinct from the substantive questions to the Applicant set out above, and are addressed to the Examining Authority rather than requiring a response from the Applicant.

Question P1 – Registration and Deadlines

Can the Examining Authority confirm that this Interested Party's registration is correctly recorded, and confirm the correct deadline reference and document naming convention for this submission within the current Examination Timetable?

Question P2 – Principal Issues and Hearings

Can the Examining Authority confirm whether Climate Change and the Greenhouse Gas Assessment has been identified as a Principal Issue for this Examination, and whether an Issue Specific Hearing (ISH) on this topic is currently scheduled or anticipated?

Question P3 – Incorporation into the Examining Authority's Own Written Questions

This Interested Party respectfully requests that the Examining Authority consider incorporating the matters raised in this Written Representation (relating to grid connection delay, supply chain and embodied carbon, battery lifecycle, soil carbon, construction traffic, and comparative lifecycle emissions data for solar, wind and nuclear/SMR generation) into its own first round Written Questions to the Applicant, given that this would place the Applicant under a procedural obligation to respond substantively.

Question P4 – Scope of Comparative Technology Evidence

This submission includes comparative lifecycle greenhouse gas and capacity factor data for solar PV, wind and Small Modular Reactor technologies (Section I above). This Interested Party would welcome the Examining Authority's guidance on whether this line of evidence is considered within the scope of matters that may properly be tested in this Examination, having regard to the relevant National Policy Statements (EN-1 and EN-3) and the general approach to alternatives assessment in Development Consent Order examinations.

Question P5 – Opportunity to be Heard

Should an Issue Specific Hearing on climate change or greenhouse gas matters be scheduled, can the Examining Authority confirm the process for requesting an opportunity to speak, and whether Interested Parties will have a further opportunity to comment on the Applicant's response to these points at a subsequent deadline?