East Pye Solar

Environmental Statement

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17 Electromagnetic Fields

17.1 Introduction

17.1.1 This Chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA) of effects on Electromagnetic Fields (EMF).

17.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects on EMF, during the construction, operation and maintenance, and decommissioning Phases.

17.1.3 The information presented within this Chapter has been informed by the design information on the Scheme provided in **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]**. For a description of the Scheme refer to ES Chapter 4.

17.1.4 EMF refers to electric and magnetic radiation which is emitted by electrical equipment. The movement of electric charge causes electric and magnetic fields to be produced in the space surrounding the charge. Human exposure to such fields can cause health problems if persistent and/or they are of high strength. The magnitude of the effects is dependent on both the field strength and the exposure time.

17.1.5 Information considered in this Chapter includes relevant EMF policy and guidance; an explanation of Baseline Conditions; and the methodologies and approaches used to inform this Chapter of the Environmental Statement (ES) for the Scheme. This is realised through a description of EMF conditions (as they are understood at time of writing). This Chapter details the findings of work undertaken to date and presents an assessment of the likely significant effects arising from the construction, operation and maintenance and decommissioning phases of the Scheme upon EMF. The Chapter also considers proposed avoidance, mitigation and compensation measures and likely residual effects following the implementation of such measures.

17.1.6 Embedded mitigation measures are presented, where necessary, and discussed to minimise the impacts of the Scheme during the construction, operation and maintenance, and decommissioning phases.

17.1.7 This Chapter is supported by the following appendix:

- **ES: Appendix 17 High-Level Electromagnetic Fields Assessment [EN0110014/APP/6.3.17.1]**.

17.1.8 A glossary of abbreviations can be found in **ES: Chapter 0 Contents, Glossary and Abbreviations [EN0110014/APP/6.1.0].**

17.3 Consultation

17.3.1 The Proposed Development has been subject to consultation throughout the DCO preparation period. A request for an EIA Scoping Opinion was sought from the Secretary of State (SoS) through the Planning Inspectorate (PINS) in January 2025. A Scoping Opinion was adopted by PINS in February 2025 **[EN0110014/APP/6.3.2.3]**.

17.3.2 **Table 17.1** summarises PINS EIA Scoping Opinion response in respect of EMF. **Table 17.2** summarises the consultation responses from consultees in relation to the EIA Scoping Opinion and any other dialogue, meetings and discussions that have taken place with them, to date.

Table 17.1: Planning Inspectorate EIA Scoping Opinion Response

Paragraph Ref	Topic	Summary of Consultation Response	Applicant's Response
3.4.1	Electric, Magnetic and Electromagnetic Fields (EMF)	EMF is to be scoped in, given the uncertainty surrounding cabling design and proximity to receptors. The ES should address the risks to human and ecological receptors arising from EMF to the extent that it is relevant to the nature of the development, taking into account relevant technical guidance, and where significant effects are likely to occur. The Inspectorate considers that the ES should set out the design measures to be implemented to avoid the potential for likely significant effects in line with DECC's Voluntary Code of Practice 2012.	A high-level EMF assessment pertaining to human health has been undertaken (as set out in this chapter) considering the proposed electrical infrastructure, including the cable route corridor (for underground cables), Project Substations and National Grid Substation, and transformers. The assessment considers the construction, operational and decommissioning phases as outlined in this Chapter. EMF effects on ecological receptors, including fish, are considered in **ES: Chapter 8 Ecology and Biodiversity [EN01100014/APP/6.1.8]**.

Table 17.2: Statutory and Other Consultee Responses

Stage	Consultee	Type and Date	Summary of Consultation Response	Applicant's Response
Scoping Response	Alburgh Parish Council	Statutory, 25.2.2025	Electric, Magnetic and Electromagnetic Fields should be scoped in.	A high-level EMF assessment pertaining to human health has been undertaken (as set out in this chapter) considering the proposed electrical infrastructure, including the cable route corridor (for underground cables), substations and transformers. The assessment considers the construction, operation and maintenance and decommissioning phases as outlined in this Chapter. EMF effects on ecological receptors, including fish, are considered in **ES: Chapter 8**
	Brooke Parish Council			
	Hempnall Parish Council			
	Norfolk County Council			

Stage	Consultee	Type and Date	Summary of Consultation Response	Applicant's Response
				Ecology and Biodiversity [EN01100014/APP/6.1.8].

Statutory Consultation and Preliminary Environmental Information Report (PIER)

17.3.3 Statutory consultation was held between 18th June 2025, and 6th August 2025. Relevant responses to the PEIR relating to EMF and how these have been addressed through the ES are set out within Consultation responses in relation to EMF can be found in **Consultation Report - Appendix 10 Section 47 Applicant Response Table [EN0110014/APP/5.11]** and **Consultation Report - Appendix 11 Section 42 Applicant Response Table [EN0110014/APP/5.12]**.

Targeted Consultation

17.3.4 A further round of targeted consultation was undertaken between 22 October 2025 and 26 November 2025 following changes to the development boundary area of the Scheme presented in the PEIR and during Stage Two Statutory Consultation. All the changes are documented in full in the **Consultation Report [EN0110014/APP/5.1].** These changes did not give rise to any materially new or different likely significant environmental effects compared to those reported in the PEIR. How these have been addressed through the ES are set out within **Consultation Report Appendix 11 Section 47 Applicant Response Table [EN0110041.5.12]** and **Consultation Report Appendix 12 Section 42 Applicant Response Table [EN0110041.5.13].**

17.4 Legislation, Planning Policy and Guidance

17.4.1 A summary of applicable legislation, planning policy and other guidance documents against which the Scheme will be considered relating to EMF is set out in **ES: Appendix 2.3 Consultation and Legislation, Planning Policy and Guidance [EN0110014/APP/6.3.2.3]**.

Legislation and Regulations

17.4.2 The Electromagnetic Compatibility Directive 2014/30/EU (Ref 17-1) relates to CE marking (Conformité Européene) which signifies that a product meets EU safety, health, and environmental standards, ensuring electrical and electronic equipment does not generate or is not affected by electromagnetic disturbances.

17.4.3 From 1 January 2021, the UKCA (UK Conformity Assessed) mark (Ref 17-2) started to replace the CE mark for goods sold within Great Britain, and the CE mark has continued to be required for goods sold in Northern Ireland and accepted in Great Britain. Businesses have the flexibility to use either the

UKCA or CE marking to sell products in Great Britain. All proposed cables will be 'UKCA' and/or 'CE' marked.

17.4.4 Levels of EMF exposure are usually controlled by legislative limits placed on the design and manufacture of electrical products and infrastructure. All cables for the Scheme will be 'UKCA' and/or 'CE' marked.

17.4.5 The Electromagnetic Compatibility Regulations 2016 (Ref 17-3) ensures that electrical and electronic equipment should not generate or be affected by electromagnetic disturbance.

National Planning Policy

17.4.6 The National Policy Statement (NPS) for electricity networks infrastructure (EN-5) (Ref 17-4) includes planning guidance for developers of nationally significant electricity network infrastructure projects and have been considered within this Chapter, particularly paragraphs 2.9.45 – 2.9.59, 2.10.11 – 2.10.13, and 2.11.9 – 2.11.16 of EN-5 which are specifically related to EMF.

Guidance

17.4.7 The UK Government's advice (Ref 17-1) on exposure to EMF radiation in the everyday environment, including electrical appliances in the home and mobile phones, has been considered.

17.4.8 The UK Government's advice and guidance on public exposure limits to EMF radiation, including NPS EN-5, is designed to comply with the 1998 International Commission on the Non-Ionizing Radiation Protection (ICNIRP) guidelines (Ref 17-5, 17-5) in terms of the 1999 EU Recommendation.

17.4.9 The reference limits presented within the ICNIRP guidelines have been considered when considering the impact upon human health from EMF.

17.4.10 National Grid emfs.info (Ref 17-6) provides additional guidance regarding the typical electromagnetic field strength of overhead and underground cables.

17.5 Assumptions and Limitations

17.5.1 The assessment has considered the proposed 132kV and 400kV underground cables, the existing overhead 400kV cables, and the proposed diversion of the 400kV overhead cables.

17.5.2 The existing overhead cabling infrastructure is assumed not to have a significant impact upon human health receptors, as it currently exists within the baseline.

17.5.3 The assessment is limited to desk-based analysis. No site surveys have been undertaken or are anticipated to be undertaken. Desk-based analysis is considered sufficient to assess the baseline conditions.

17.5.4 The Project Substations, National Grid Substation and transformers are assumed to be 'CE' marked (Conformité Européene, or European Conformity marking), and/or 'UKCA' marked (UK Conformity Assessed), as required by safety, health, and environmental protection requirements of the European Union and the United Kingdom. CE and UKCA markings indicate that a product has been assessed by the manufacturer and determined to meet these requirements. The CE marking ensures that electrical and electronic equipment does not generate, or is not unintentionally affected by, electromagnetic disturbance. The transformer and substations are also predicted to produce fields at a lower level than that of underground cables and overhead powerlines because the equipment is predicted to be housed in protective enclosures.

17.6 Assessment Methodology

Assessment Scope

17.6.1 The focus of the assessment is primarily on the Scheme's proposed electrical infrastructure, including the cable route corridor (for underground cables), Project Substations, National Grid Substation, transformers and overhead powerlines.

17.6.2 The methodologies described in this Section have been developed in line with relevant planning policy and industry guidance, including the references set out above, for assessing the potential effects from the Scheme on EMF.

17.6.3 **Table 17.3** provides a summary of the potential effects scoped in and out of the ES.

Table 17.3 EMF Scoping Summary

Topic	Construction	Operation	Decommissioning
Electromagnetic Fields: Impacts to Human Receptors	Scoped Out	Scoped In	Scoped Out

Scoped Out

17.6.4 The cables will not be powered during construction of the Scheme. Therefore, there will be no effects of EMFs during the construction phase.

17.6.5 The cables will not be powered during decommissioning. Therefore, there will be no effects of EMFs during the decommissioning phase. The National Grid Substation and the Grid Connection Infrastructure would remain in situ during decommissioning.

Scoped in

17.6.6 Cables will be powered during the operation of the Scheme, and therefore the cables will be a source of EMF in the environment.

17.7 Study Area

17.7.1 The Study Area for EMF includes the Order Limits and adjacent developments.

Sensitivity of Receptor

17.7.2 The sensitivity of likely impacted receptors, defined depending on the vulnerability, recoverability and value/importance of the receptor, to potential effects arising from the Scheme is assessed in line with **Table 17.4** below.

Table 17.4: Receptor Sensitivity

Sensitivity	Definition
High	A receptor that requires exceptional isolation or shielding from EMFs of any kind, e.g. high-grade medical or scientific equipment.
Medium	A receptor that routinely experiences varying EMFs within a regulated range with no adverse impacts, e.g. humans, pacemakers and intra-cardiac defibrillators.
Low	A receptor that is largely unaffected by EMFs of any kind.
Negligible	A receptor where there will be no discernible effect and therefore is not considered.

Magnitude of Impact

17.7.3 The magnitude of impact is outlined in **Table 17.5** below.

Table 17.5: Magnitude of Impact

Magnitude	Definition
High	If a person could be subjected to EMF which is above the human health limit with respect to their setting as per ICNIRP guidance.
Medium	If a person could be subjected to EMF which is above the reference health limit but below the human health limit with respect to their setting as per ICNIRP guidance e.g. increased exposure limits based on a person's profession.
Low	If a person could be subjected to EMF which was below the reference health limit with respect to their setting as per ICNIRP guidance.
Negligible	No measurable EMF could be experienced by any person.

Categorising Scale of Effect

17.7.4 The scale of effect that the Scheme may have on an impacted receptor will be influenced by a combination of the sensitivity of the identified receptor and the magnitude of impact.

17.7.5 There are four categories demonstrating the scale of effect:

- Negligible;
- Minor;
- Moderate; and
- Major.

17.7.6 The significance of effects matrix for EMF is presented in **Table 17.6** below.

Table 17.6: Effect Significance Matrix

Magnitude of Impact	Sensitivity			
	High	Medium	Low	Negligible
High	Major	Major/Moderate	Moderate	Negligible
Medium	Major/Moderate	Moderate	Moderate/Minor	Negligible
Low	Moderate	Moderate/Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

17.7.7 The nature of effects will be defined as either: beneficial or adverse.

17.7.8 Effects are considered to be significant in EIA terms if the resultant significance of effect is **Moderate**, **Moderate/Major** or **Major**.

17.8 Baseline Conditions

The Order Limits

17.8.1 The Scheme is located within the administrative areas of Norfolk County Council (NCC) and South Norfolk Council (SNC) who are the host authorities. A full description of the Order limits is provided in **ES Chapter 4: The Scheme [EN0110014/APP/6.1.4]**.

Existing Baseline

17.8.2 The existing baseline conditions are derived from a desk-based review of the available aerial and street view imagery of the Order Limits area undertaken as a part of the high-level EMF assessment (**ES: Appendix 17.1 High-Level Electro Magnetic Fields Assessment [EN0110014/APP/6.3.17.1]**). Field work or site surveys are not required with respect to EMF and human health, and there are no future field work/site surveys proposed.

17.8.3 This review found that there is an existing 400kV overhead cable route and electrical infrastructure within the area surrounding the Site. These will have associated EMF which have also been considered.

17.8.4 Receptors pertaining to human health (in this case public rights of way and permanent places of work) exist within the Order Limits. Limited areas of Cable Route Corridors CRC2, CRC4 and CRC6 are in close proximity to residential dwellings. For infrastructure proposed as part of the Scheme, a minimum distance of 15m is maintained between human health receptors (residential dwellings and public rights of way) and overhead line cables; based on the distance at which the electrical field strength for a 400 kV overhead cable is below the threshold value of 5 kV m^{-1}. Given that the existing overhead cabling infrastructure is assumed not to have a significant impact upon the existing public rights of way, it is considered that the proposed diversion of the existing structure does not introduce an additional risk, as it utilises the existing infrastructure.

17.8.5 It is considered that workers will be closest to the infrastructure during construction of the Scheme, during which the cables will not be powered, and therefore not effected.

17.8.6 The Scheme will utilise the existing overhead 400kV cables and implement a diversion to the existing network, both of which have been considered within the assessment.

Future Baseline

17.8.7 It is considered there will be no change to the future baseline for EMF. The existing baseline is not anticipated to change in the absence of the Scheme.

17.9 Embedded Mitigation

17.9.1 Potential environmental effects have been or will be prevented, avoided or mitigated to reduce residual effects to a minimum, in accordance with the mitigation hierarchy, through design and/or management of the Scheme as outlined in this section.

17.9.2 For overhead lines, a setback distance of at least 15m from the existing 400kV overhead cables is to be maintained between the overhead cables, and receptors pertaining to human health; based on the distance at which the electrical field strength for a 400kV overhead cable is below the threshold value of 5kV m^{-1}.

17.9.3 For 132kV and 400kV underground cables, electric fields will be contained within the cable's protective insulation and sheath, and therefore there are no external electric fields. Therefore, a setback distance from the underground cables is not required.

17.9.4 All proposed cables will be ‘UKCA’ and/or ‘CE’ marked. Electrical fields from the underground power cables will be shielded by the surrounding cable duct and the conducting soil.

17.9.5 No other embedded mitigation measures are necessary as the Scheme will be designed so that the maximum levels of electromagnetic radiation during

construction, operation and maintenance, and decommissioning phases will be below ICNIRP reference levels.

17.9.6 Apart from measures embedded into the design, there are no other relevant environmental measures considered to be required to control or manage EMF effects on human health.

17.10 Assessment of Likely Effects

Operation and Maintenance Phase

17.10.1 Human health receptors are considered to be of **Medium** sensitivity because people experience EMFs from a man-made environment regularly.

17.10.2 The reference limits as per the 1998 ICNIRP guidelines outline that safe levels of magnetic fields and electric fields should not exceed 100μT (for magnetic fields) and 5 kV m^{-1} (for electric fields).

17.10.3 EMFs are considered to be temporary (for the duration of the Scheme) and a direct impact due to the Scheme.

17.10.4 During the operational and maintenance phase, underground cables will operate at a maximum voltage of 400kV. The maximum magnetic field strength at 1m above ground, directly above the centreline measures 95μT, which is less than the reference limit of 100 μT for magnetic fields. The magnitude of impact is low, and the resulting impact significance is **Minor** and **Not Significant**.

17.10.5 Electric fields are contained within the cable's protective insulation and sheath; therefore, no external electric fields are expected to occur due to the underground cables.

17.10.6 The Scheme will utilise the existing 400kV overhead cable infrastructure and implement a diversion within Sub-Site 1B. The magnetic field strength for 400kV overhead cables with a 7.6m ground clearance measures 81 μT which is less than the reference limit of 100 μT for magnetic fields. The magnitude of impact is **Low,** and the resulting impact significance is **Minor** and **Not Significant**.

17.10.7 The maximum electric field strength at a distance of 0m for the existing 400kV overhead cables measures 10kV m^{-1}. Considering the distances of at least 15m between the existing overhead cables, new cables forming into this infrastructure, and human health receptors, the electric field strength measures less than the reference limit of 5kV m^{-1}.

17.10.8 The overall magnitude of impact is considered to be **Low** due to the measured field strength for magnetic fields being lower than the reference limit as outlined by the relevant guidance. The significance of effect in relation to EMF effects on human health (as a **Medium** sensitivity receptor) is considered **Minor** and therefore **Not Significant**.

17.11 Additional Mitigation measures

17.11.1 Apart from the embedded mitigation measures mentioned above, no additional mitigation measures for the Scheme are required because no likely significant effects are anticipated.

17.12 Residual Effects

17.12.1 It is anticipated that through the use of the embedded mitigation measures, the Scheme will result in **No Significant** residual adverse EMF effects on human health.

17.13 Cumulative Effects Assessment

17.13.1 his Section presents an assessment of cumulative effects between the Scheme and other existing and/or approved developments.

17.13.2 As set out in **ES: Chapter EIA Methodology [EN0110014/APP/6.1.2]**, a Cumulative Effects Assessment (CEA) has been undertaken as part of the EIA in accordance with PINS Advice on Cumulative Effects Assessment (September 2024) and has considered two types of cumulative effects.

- In combination effects: the combined effect generated by individual effects on a particular receptor (presented within **ES: Chapter 19 In-Combination Effects [EN0110014/APP/6.1.19]**; and
- Cumulative effects: effects generated by the Scheme and other planned or approved developments on the same receptor (presented in **ES: Chapter 6 to 18**).

Cumulative Effects

17.13.3 Cumulative effects may arise as a result of effects associated with the Scheme combining with effects associated with other developments. The list of developments has been narrowed down to focus on those developments which are most likely to give rise to cumulative effects. A long-list was generated which was then refined following consultation with relevant planning authorities, this short-list forms the basis of this assessment.

17.13.4 The shortlist of cumulative developments/allocations can be found in **ES: Appendix 2.4: Cumulative Schemes [EN0110014 /APP/6.3.2.4]**.

Cumulative Effects Assessment

17.13.5 Cumulative effects are theoretically possible from the proposed cabling in combination with other solar developments that are consented, under construction or operational. The scheme has been considered with the cumulative schemes identified in **ES: Appendix 2.4 Cumulative Schemes [EN0110014/APP/6.3.2.4]** comprising underground or overhead cabling.

17.13.6 Cumulative effects are considered possible when cable infrastructure exist/are buried within the same trench. Electromagnetic fields exist at small distances from cables and diminish to a negligible level field strength within tens of metres from the cables.

17.13.7 A cumulative effect is considered possible with the 'Land to the North Of Station Road Tivetshall St Margaret Norfolk' development due to the vicinity of underground cables being located in the same trench. Considering the separation distance between the nearest residential dwellings and location of underground cables, a significant cumulative effect is not considered possible.

17.13.8 Considering the distances between the Scheme and remaining cumulative schemes identified in **ES: Appendix 2.4 Cumulative Schemes [EN0110014/APP/6.3.2.4]** measuring hundreds of metres and kilometres, no significant cumulative effect is considered possible.

17.13.9 Significant cumulative effects from the proposed cabling in combination with the use of household items are not expected. Electrical household appliances will add to the overall exposure of EMF. However, levels should remain below the recommended exposure limit. This is due to the lower voltages of the appliances which are not used constantly, thus providing only a temporary addition to the resultant EMF levels.

17.14 Conclusion

17.14.1 This Chapter has identified the existing environment in relation to EMF. It has outlined the assessment work undertaken to date concerning the potential impacts on human health from EMF arising from the cable routes during the construction, operation and maintenance and decommissioning phases.

17.14.2 Considering the maximum voltages of all proposed and existing underground and overhead cables, the resulting significance of these potential effects is currently considered to be **Minor** and **Not Significant**.

17.14.3 It is anticipated that with the implementation of embedded mitigation measures, the Scheme will result in no significant adverse EMF effects on human health

17.14.4 **Table 17.7** provides a summary of the EMF effects.

Table 17.7: Summary or Residual effects for EMF

Receptor	Sensitivity	Description of Impact	Magnitude of Impact	Scale and Nature of Effect	Significant/Not Significant
Construction Phase					
Scoped out					
Operational and Maintenance Phase					
Human receptors	High	Electromagnetic field radiation effecting human health	Minor	Minor	Not significant
Decommissioning Phase					
Scoped out					

17.15References

Ref 17-1. UK Health Security Agency, Electric and magnetic fields: health effects of exposure

Ref 17-2. ICNIRP Guidelines 2020, Guidelines for limiting exposure to EMF (100 kHz to 300 GHz)

Ref 17-3. UK Government (2017), The Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

Ref 17-4. Department for Energy Security and Net Zero (2024) National Policy Statement for Electricity Networks Infrastructure (EN-5).

Ref 17-5. International Commission on the Non-Ionizing Radiation Protection (1998) ICNIRP Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic and Electromagnetic Fields (Up To 300 Ghz).

Ref 17-6. EMFs.info (2025) Electric and magnetic fields.