
EAST YORKSHIRE SOLAR FARM

**East Yorkshire Solar Farm
EN010143**

Environmental Statement

**Appendix 6-3: In-Combination Climate Change Impact (ICCI) Environmental
Technical Disciplinary Risk Assessment
Document Reference: EN010143/APP/6.2**

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1. Introduction

1.1.1 This appendix supports **Chapter 6: Climate Change, ES Volume 1 [EN010143/APP/6.1]** and presents the results of the In-combination Climate Change Impact (ICCI) Assessment for the Scheme in the form of a summary table.

1.2 In-combination Climate Change Impact Assessment

1.2.1 The technical disciplines have reviewed the future climate projections as set out in **Chapter 6: Climate Change, ES Volume 1 [EN010143/APP/6.1]** and examined the sensitivity of assets before commenting on the combined impact of climate change and the Scheme on surrounding sensitive receptors (as identified by the relevant technical disciplines for **Chapters 7 to 16, ES Volume 1 [EN010143/APP/6.1]**).

1.2.2 The parameters considered by the technical disciplines in the preparation of the ICCI assessment are:

- a. Extreme weather events (heatwaves, storm surges, wildfire and drought);
- b. Sea level rise;
- c. Temperature changes;
- d. Rainfall changes; and
- e. Changes in wind patterns.

Table 1. ICCI Assessment Summary

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
Air Quality	Decrease in annual precipitation rate	Unlikely	Increase in dust due to lower rainfall	Dust impacts from construction works will be mitigated through the appropriate level of site mitigation for the identified level of risk, as secured through the provision of a detailed Framework Construction Environment Management Plan (CEMP) [EN010143/APP/7.7] included within the Development Consent Order (DCO) Application. As such, with appropriate mitigation the impact is negligible (not significant).	Negligible	Negligible	Not Significant
	Increase in frequency and	Unlikely	Increase in dust due to	Dust impacts from construction works will be mitigated through	Negligible	Negligible	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
	intensity of heatwaves		faster drying of soil stockpiles	the appropriate level of site mitigation for the identified level of risk, as secured through the provision of a detailed Framework CEMP [EN010143/APP/7.7] included within the DCO Application. As such, with appropriate mitigation the impact is negligible (not significant).			
Biodiversity Net Gain				No ICCIs identified			
Ecology	Increase in mean annual maximum air temperature	Very likely (Operation)	Degradation of ecosystem services and reduced food availability	The proposed habitat creation/enhancement has been designed to maintain connectivity and provide an increased overall area of biodiverse semi-natural habitat. This will provide a variety of fauna with a varied and increased food source,	Low	Low	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				<p>that will help boost their resilience to the impacts of future temperature change. Further details of how these habitats will be created and managed can be found within the Framework Landscape and Ecological Management Plan (LEMP), ES Volume 7 [EN010143/APP/7.14]. The LEMP is secured through the DCO.</p>			
	Decrease in annual precipitation rate	Unlikely (Construction)	Reduced success of new planting	<p>Resilience of landscaping to climate change will be ensured by the habitat creation/enhancement requirements provided within the ES to ensure that climate change is taken into consideration in the choice of species and</p>	Low	Low	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				adequate monitoring post-planting occurs in accordance with the Framework LEMP, ES Volume 7 [EN010143/APP/7.14] . The LEMP is secured through the DCO.			
	Increase in winter precipitation rate	Possible (Construction)	Reduced success of establishment of new planting due to wetter conditions	Landscape planting will take into consideration climate change in the selection of appropriate woodland tree and shrub species planting and habitat creation and adequate monitoring post-planting occurs in accordance with the Framework LEMP, ES Volume 7 [EN010143/APP/7.14] . Attenuation storage at the Grid Connection Substations has been designed to take	Low	Low	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				account of climate change, within the Framework Surface Water Drainage Strategy, Appendix 9-4, ES Volume 6 [EN010143/APP/6.2].			
	Increase in frequency and intensity of heatwaves	Unlikely (Construction)	Reduced success of establishment of new planting due to hotter, drier conditions	Landscape planting will take into consideration climate change in the selection of appropriate woodland tree and shrub species planting and habitat creation and adequate monitoring post-planting occurs in accordance with the Framework LEMP, ES Volume 7 [EN010143/APP/7.14].	Low	Low	Not Significant
	Increase in occurrences of droughts	Possible (Construction)	As above	As above	Low	Low	Not Significant
Flood Risk	No ICCIs identified						

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
Glint and Glare				No ICIs identified			
Ground Conditions				No ICIs identified			
Cultural Heritage				No ICIs identified			
Landscape	Increase in summer temperatures	Likely	Increase in risk to tree and plant species adaptability	The Scheme has been designed, as far as practicable, to avoid adverse effects on the landscape through site selection, selection of locations of structures, landscape characteristic enhancement and refinement as described in Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1] . It is good practice to plant a wide range of	Low	Low	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				species - the landscape strategy has sought to embed a number of mitigation measures which are set out in the Framework LEMP [EN010143/APP/7.14] , secured through the DCO			
Minerals				Scoped out			
Noise	Increase in occurrence of heatwaves	Likely	Potential to exacerbate noise effects on communities in terms of individual dwellings and on a wider community, due to windows being open more often due to an increase in high	The noise assessment assumes windows are open and closing windows is a form of mitigation against noise. Consequently, there is no further impact on noise effects arising from the ICCI. The noise assessment has followed national guidance listed in section 11.2 of Chapter 11, ES	Negligible	Negligible	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCLs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
			temperatures across construction, operational, and decommissioning phases	Volume 1 [EN010143/APP/6.1]. Noise modelling also based on worst-case principles, assuming inverters for example are operating at maximum sound power levels at all times, which is unlikely.			
	Increase in mean temperature and humidity	Likely	Reduced atmospheric attenuation of noise	Over distances of a few hundred metres, which covers the noise study area, atmospheric effects can be ignored. Consequently, increases in temperature and humidity are unlikely to affect noise sources during the construction and operational phases.	Negligible	Negligible	Not Significant
Socio-economics				No ICCLs identified			

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
and Land Use							
Human Health				No ICCIs identified			
Soils and Agricultural Land	Decrease in summer precipitation rate	Unlikely	Soils may be at risk of erosion if handled when too dry. This could also result in drier stockpiles.	During the construction phase, decreased precipitation could result in the drying of soils both <i>in situ</i> and in the temporary stockpiles created during construction. Dry soil can be more prone to erosion, particularly where there is an absence of vegetation cover. Mitigation measures identified in the Framework CEMP [EN010143/APP/7.7] is included within the DCO Application. A Framework Soil Management Plan (SMP)	Negligible	Low	Not significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				[EN010143/APP/7.10] is included within the DCO application which details the requirements for the appropriate management of soil resources during the construction phase only will be secured through the DCO and will be produced prior to construction.			
	Increase in winter precipitation rate	Possible	Soils may be at risk of structural damage if handled or trafficked when too wet. This could result in increased flood risk and erosion of soils.	During the construction phase, the incorrect handling of soils (e.g., stripping, storage or reinstatement) when they are in a wet state can cause structural damage (e.g., through compaction or deformation). Compaction lowers soil permeability increasing the risk of flooding and	Negligible	Low	Not significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				<p>levels of surface water run-off. Structural damage can also leave the soils more vulnerable to erosion increasing the risk of silty runoff. Structural damage (compaction and smearing) can also occur due to the trafficking (driving over) of wet soils by heavy machinery.</p> <p>Increase in Winter Precipitation will increase the likelihood of soils being in a wet state. Mitigation measures identified in the Framework CEMP [EN010143/APP/7.7] and Framework SMP [EN010143/APP/7.10] should be adhered to in order to limit impact as far as possible.</p>			

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
	Decrease in summer precipitation rate	Possible	Soils may be at risk of erosion if handled when too dry. This could also result in dryer stockpiles.	During the operational phase, decreased precipitation, could result in the drying of soils leaving it more vulnerable to erosion. However, it is anticipated that there will be no requirement for the handling of soil resources during the operational phase and that the majority of vehicle movements within the Solar Photovoltaic (PV) Site will be via access tracks. Any trafficking of vehicle off the tracks will be on vegetated (grassed) soil surfaces which bind the soil and reduce erosion risk. Therefore, no impacts are anticipated however the mitigation measures identified in	Negligible	Low	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				<p>the Framework Operational Environmental Management Plan (OEMP) [EN010143/APP/7.8] – is included within the DCO application – should be adhered to.</p> <p>In the unlikely event that maintenance of underground cables is required necessitating the handling of soil resources in order to access to the fault, this would be confined to small discrete areas of a significantly smaller scale that at construction. Works plans (or similar) for these operations would include the appropriate management of soil resources (based upon the measures</p>			

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				described in the Framework CEMP [EN010143/APP/7.7] and Framework SMP [EN010143/APP/7.10] which would mitigate any impacts.			
	Increase in winter precipitation rate	Likely	Soils may be at risk of structural damage if handled or trafficked when too wet. This could also result in increased flood risk and erosion of soils.	During the operational phase, the incorrect handling of soils, or trafficking across soils, when they are in a wet state can cause structural damage for example through compaction or deformation. This structural damage lowers soil permeability increasing the risk of flooding and levels of surface water runoff; and can also leave the soils more vulnerable to erosion increasing the risk of silty runoff.	Low	Moderate	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
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Increase in winter precipitation will increase the likelihood of soils being in a wet state.

It is anticipated that there will be no requirement for the handling of soils during the operational period. However, in the unlikely event that maintenance of underground cables is required this would be confined to small discrete areas of a significantly smaller scale than at construction. Works plans (or similar) for these operations would include the appropriate management of soil resources (based upon the measures described in the

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				<p>Framework CEMP [EN010143/APP/7.7] and Framework SMP [EN010143/APP/7.10] which would mitigate any impacts.</p> <p>Measures would be put in place to control the movement of vehicles over wet ground to mitigate trafficking damage. These will be defined in the detailed OEMP (based on the Framework OEMP [EN010143/APP/7.8] prepared prior to construction.</p>			
	Decrease in summer precipitation rate	Possible	Soils may be at risk of erosion if trafficked when too dry. This could also result in dryer stockpiles.	During the decommissioning phase, it is assumed (as a worst-case) that underground cables will be removed through re-excavation in an operation similar	Negligible	Low	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				<p>to construction, and that therefore the temporary stockpiling of soils will be required.</p> <p>Decreased precipitation, could result in the drying of soils both in situ and in the stockpiles. Dry soil can be more prone to erosion, particularly where there is an absence of vegetation cover.</p> <p>Appropriate mitigation measures are identified within the Framework Decommissioning Environment Management Plan (DEMP) [EN010143/APP/7.9] and are likely to be the same as/similar to those described at</p>			

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				construction within the Framework CEMP [EN010143/APP/7.7] and Framework SMP [EN010143/APP/7.10] .			
	Increase in winter precipitation rate	Likely	Soils may be at risk of structural damage if handled or trafficked when too wet, particularly during late Autumn and Winter. This could also result in increased flood risk and erosion of soils.	During the decommissioning phase, the incorrect handling of soils, or trafficking across soils, when they are in a wet state can cause structural damage for example through compaction or deformation. This structural damage lowers soil permeability increasing the risk of flooding and levels of surface water runoff; and can also leave the soils more vulnerable to erosion increasing the risk of silty runoff.	Low	Moderate	Not Significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				<p>Increase in winter precipitation will increase the likelihood of soils being in a wet state.</p> <p>Appropriate mitigation measures will be identified within the Framework DEMP [EN010143/APP/7.9] and are likely to be the same as/similar to those described at construction within the Framework CEMP [EN010143/APP/7.7] and Framework SMP [EN010143/APP/7.10].</p>			
Transport				No ICCIs identified			
Waste				No ICCIs identified			
Water	Increase in winter precipitation rate	Possible	Increased ground water level mixed with potential existing	Any areas of contamination encountered during construction would be removed, remediated,	Low	Moderate	Not significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICCIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
			contamination if present	or mitigated. This measure is secured through the Framework CEMP [EN010143/APP/7.7] .			
	Increase in winter precipitation rate	Possible	Peak discharge rates exceeding capacity of attenuation treatment train	Attenuation storage at the Grid Connection Substations has been designed to take account of climate change, within the Framework Surface Water Drainage Strategy (Appendix 9-4, ES Volume 2 [EN010143/APP/6.2]) .	Low	Low	Not significant
	Decrease in summer precipitation rate	Possible	More regular cleaning of panels from dust build-up during extended dry periods	Standard 2-yearly panel cleaning is assumed, with no cleaning products used and requirement of 250ml (millilitres) of water per panel. Any additional cleaning would be irregular and infrequent, with	Low	Negligible	Not significant

Discipline	Climate hazard	Likelihood of climate hazard occurring	Likely ICIs identified	Description of ICCI considering embedded environmental measures/good practice	Likelihood of ICCI occurring	Consequence	Significance of effects
				negligible amounts of water used as secured through the Framework OEMP [EN010143/APP/7.8] .			
Arboriculture				No ICIs identified			

Abbreviations

Abbreviation	Definition
CEMP	Construction Environmental Management Plan
DCO	Development Consent Order
DEMP	Decommissioning Environmental Management Plan
ICCI	In-combination Climate Change Impact
LEMP	Landscape and Ecological Management Plan
ml	Millilitres
OEMP	Operational Environmental Management Plan
PV	Photovoltaic
SMP	Soil Management Plan