FENWICK SOLAR FARM

Fenwick Solar Farm

EN010152

Environmental Statement

Volume III Appendix 6-3: In-Combination Climate Change Impact Assessment – Environmental Technical Disciplinary Risk Assessment

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1. Introduction

1.1 Purpose of this Appendix

1.1.1 This Environmental Statement (ES) appendix supports **ES Volume I Chapter 6: Climate Change [EN010152/APP/6.1]** and presents the results of the In-combination Climate Change Impact (ICCI) Assessment for the construction, operation, maintenance, and decommissioning phases of the Scheme, as detailed in Table 1, Table 2 and Table 3.

1.2 In-Combination Climate Change Impact Assessment

1.2.1 The technical disciplines have reviewed the future climate projections as set out in **ES Volume I Chapter 6: Climate Change [EN010152/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 in **ES Volume I Chapter 7** to **14 [EN010152/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 – Construction Phase

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
Air Quality	Decrease in annual precipitation rate	Unlikely	Increase in dust due to lower rainfall	Dust impacts from construction will be mitigated through the appropriate level of site mitigation for the identified level of risk as detailed in the **Framework Construction Environment Management Plan (CEMP) [EN010152/APP/7.7]**. For example, through increased frequency of damping down using water (reusing water or suppressants where practicable) or using temporary covering, or earlier seeding where this would deliver a benefit. With appropriate mitigation the effect is negligible (not significant).	Negligible	Negligible	Not Significant
	Increase in frequency and intensity of heatwaves	Unlikely	Increase in dust due to faster drying of soil stockpiles	Dust impacts from construction will be mitigated through the appropriate level of site mitigation for the identified level of risk as detailed in the **Framework CEMP [EN010152/APP/7.7]**. For example, through increased frequency of damping down using water (reusing water or suppressants where practicable) or using temporary covering, or earlier seeding where this would deliver a benefit. With appropriate mitigation the effect is negligible (not significant).	Negligible	Negligible	Not Significant
Biodiversity Net Gain	No ICCIs identified						
Ecology	No ICCIs identified						
Flood Risk	No ICCIs identified						
Glint and Glare	No ICCIs identified						
Cultural Heritage	No ICCIs identified						
Landscape	No ICCIs identified						
Minerals	No ICCIs identified						
Noise	No ICCIs identified						
Socio-Economic and Land Use	No ICCIs identified						
Human Health	No ICCIs identified						
Soils	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.	Decreased precipitation could result in the drying of soils both in situ and in the temporary stockpiles created during the construction phase. Dry soil can be more prone to erosion, particularly where there is an absence of vegetation cover. Mitigation measures identified in the **Framework CEMP [EN010152/APP/7.7]** will be adhered to. The	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
				Framework Soil Management Plan (SMP) [EN010152/APP/7.10] details the requirements for the appropriate management of soil resources during the Scheme's lifetime including construction phase.			
	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.	The incorrect handling of soils (e.g. stripping, storage or reinstatement) when they are in a wet state can cause structural damage for example through compaction or deformation. Compaction lowers soil permeability increasing the risk of flooding and levels of surface water runoff. Structural damage can also leave the soils more vulnerable to erosion increasing the risk of silty run off. Structural damage (compaction and smearing) can also occur due to the trafficking (driving over) of wet soils by heavy machinery. Increase in winter precipitation will increase the likelihood of soils being in a wet state. Mitigation measures identified in the **Framework CEMP [EN010152/APP/7.7]** and the **Framework SMP [EN010152/APP/7.10]** will be adhered to.	Negligible	Low	Not significant
Transport	No ICCIs identified						
Materials and Waste	No ICCIs identified						
Water	Increase in winter precipitation rate	Possible	Increased ground water level mixed with potential existing contamination if present.	Any areas of contamination encountered during construction would be removed, remediated, or mitigated.	Low	Negligible	Not significant
Arboriculture	No ICCIs identified						

Table 2: ICCI Assessment Summary – Operational and Maintenance Phase

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
Air Quality	No ICCIs identified						
Biodiversity Net Gain	No ICCIs identified						
Ecology	No ICCIs identified						
Flood Risk	No ICCIs identified						
Glint and Glare	No ICCIs identified						
Cultural Heritage	No ICCIs identified						
Landscape	No ICCIs identified						

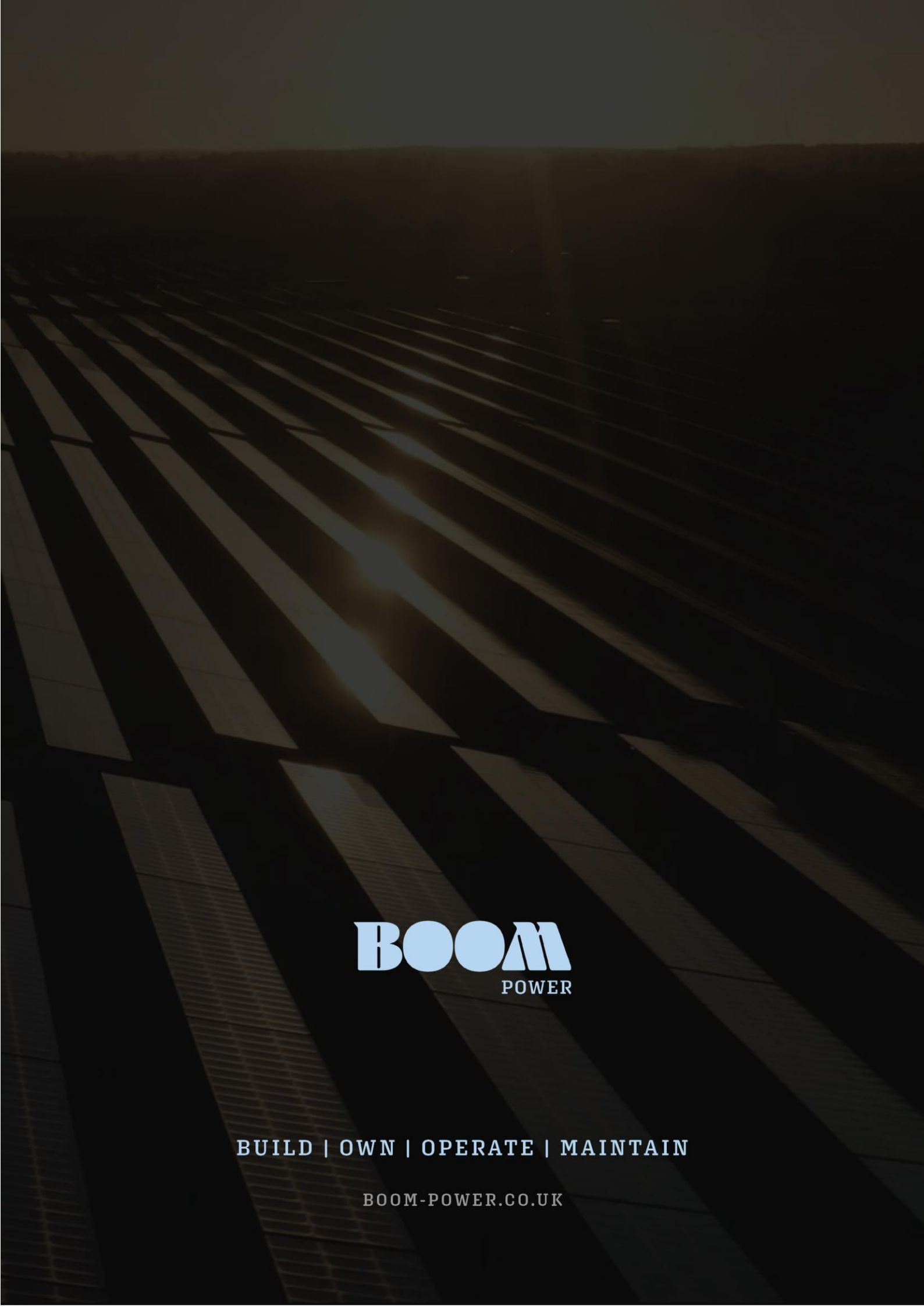
Discipline	Climate Hazard	Likelihood of Climate Hazard Occurring	Likely ICCIs Identified	Description of ICCI Considering Embedded Environmental Measures/Good Practice	Likelihood of ICCI Occurring	Consequence	Significance of Effects
Minerals	No ICCIs identified						
Noise	No ICCIs identified						
Socio-Economic and Land Use	No ICCIs identified						
Human Health	No ICCIs identified						
Soils	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.	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 run off; and can also leave the soils more vulnerable to erosion increasing the risk of silty run off. 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 operation and maintenance phase. 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 that at construction. Works plans (or similar) for these operations would include the appropriate management of soil resources (based upon the measures described in the **Framework CEMP [EN010152/APP/7.7]** and **Framework SMP** [**EN010152/APP/7.10]**, and in the **Framework OEMP [EN010152/APP/7.8]** which will be developed ahead of the ES) which would mitigate any impacts. 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 prepared prior to the construction phase.	Low	Moderate	Not Significant
Transport	No ICCIs identified						
Materials and Waste	No ICCIs identified						
Water	Increase in winter precipitation rate	Possible	Peak discharge rates exceeding capacity of attenuation treatment train.	Attenuation storage will be designed to take account of climate change. Further details are available in **ES Volume III Appendix 9-4: Drainage Strategy [EN010152/APP/6.3]**.	Low	Negligible	Not significant
	Increase in winter precipitation rate	Possible	Increase flow leading to change in sediment dynamics within the channel.	Climate change allowances have been included in the drainage design (**ES Volume III Appendix 9-4: Drainage Strategy [EN010152/APP/6.3]**).	Low	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
	Decrease in summer precipitation rate	Possible	More regular cleaning of Solar PV Panels from dust build-up during extended dry periods.	Standard 2-yearly Solar PV Panel cleaning is assumed, with no cleaning products used and requirement of 250 ml of water per Solar PV Panel. Any additional cleaning would be irregular and infrequent, with negligible amounts of water used. Panel cleaning is covered in the **Framework OEMP [EN010152/APP/7.8].**	Low	Negligible	Not significant
Arboriculture	No ICCIs identified						

Table 3: ICCI Assessment Summary – Decommissioning Phase

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
Air Quality	No ICCIs identified						
Biodiversity Net Gain	No ICCIs identified						
Ecology	No ICCIs identified						
Flood Risk	No ICCIs identified						
Glint and Glare	No ICCIs identified						
Cultural Heritage	No ICCIs identified						
Landscape	No ICCIs identified						
Minerals	No ICCIs identified						
Noise	No ICCIs identified						
Socio-Economic and Land Use	No ICCIs identified						
Human Health	No ICCIs identified						
Soils	Decrease in summer precipitation rate	Possible	Soils may be at risk of erosion if handled or trafficked when too dry. This could also result in dryer stockpiles.	It is assumed (as a worst case) that underground cables will be removed through re-excavation in an operation similar to construction, and that therefore the temporary stockpiling of soils will be required. 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. Appropriate mitigation measures have been identified within the **Framework Decommissioning Environment Management Plan (DEMP)**	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
				[EN010152/APP/7.9] and **Framework SMP [EN010152/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.	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 run off; and can also leave the soils more vulnerable to erosion increasing the risk of silty run off. Increase in winter precipitation will increase the likelihood of soils being in a wet state. Appropriate mitigation measures have been identified within the **Framework Decommissioning Environment Management Plan (DEMP) [EN010152/APP/7.9]** and **Framework SMP [EN010152/APP/7.10]**.	Low	Moderate	Not Significant
Transport	No ICCIs identified						
Materials and Waste	No ICCIs identified						
Water	No ICCIs identified						
Arboriculture	No ICCIs identified						



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