

South Brooks Solar Farm

Preliminary Environmental Information

Volume 2: Appendix 11.1: Climate Resilience Existing Baseline

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1 Climate Resilience Existing Baseline

1.1 Introduction

1.1.1 This appendix presents the projected climate changes in the area of the Project.

1.2 Existing baseline

1.2.1 The Project is situated in Lydd, Kent within South East England. The nearest weather station is at Dungeness, Kent, where current weather conditions are characterised by mild annual temperatures (average 13.9°C compared to UK average 12.8°C), and below average rainfall (714.98 mm annually) in comparison to the rest of the UK (1,162.68 mm annually) **(Error! Reference source not found.-1)**.

Table 1-1: Current period weather data for Dungeness, Kent

Climate Change Variable	Current period weather data (1991-2020)
Average Annual Maximum Temperature (°C)	13.93
Warmest Month (Max Temperature (°C))	August (20.30)
Coldest Month (Min Temperature (°C))	February (3.18)
Total Annual Rainfall (mm)	714.98
Driest Month (mm)	March (41.87)
Wettest Month (mm)	November (88.70)

Future baseline

1.2.2 Future climatic conditions are projected to change in comparison to the present baseline conditions. In particular, winters are projected to become increasingly warmer and wetter whilst summers are projected to become increasingly hotter and drier, as shown in Tables 1-2 – 1-5.

1.2.3 The climate projections displayed in the following tables (Tables 1-2 – 1-5) have been extracted from the UK Climate Projections 2018 (UKCP18) data developed by the UK Climate Impacts Programme. The projections displayed below cover the indicative lifetime of the Project at the 50th percentile, with ranges shown for the 10th and 90th percentiles, for the Representative Concentration Pathway (RCP) 8.5 (high emissions) scenario. The figures are expressed as temperature/precipitation anomalies in relation to a 1981 – 2000 baseline.

1.2.4 UKCP18 projections do not contain specific outputs for windspeed changes for the UK. However, global projections of wind speed over the UK at 10m height show no significant changes in the first part of the 21st century but predict increases in wind speed for the winter season from 2050 onwards. This would be associated with an increase in frequency of winter storms.

Table 1-2: Projected Change in Temperature in Southeast England

Climate Variable	Time Horizon (relative to 1981-2000)			
	2020-2039	2040-2059	2060-2079	2080-2099

	Time Horizon (relative to 1981-2000)			
Mean annual air temperature anomaly at 1.5m (°C)	+1.06	+1.88	+3.01	+4.34
	(+0.45 to +1.70)	(+0.96 to +2.85)	(+1.59 to +4.48)	(+2.58 to +6.2)
Mean summer air temperature anomaly at 1.5m (°C)	+1.37	+2.53	+3.94	+5.83
	(+0.45 to +1.70)	(+0.96 to +2.85)	(+1.74 to +6.16)	(+2.58 to +6.2)
Mean winter air temperature anomaly at 1.5m (°C)	+0.88	+1.60	+2.47	+3.47
	(+0.09 to +1.73)	(+0.48 to +2.8)	(+0.79 to +4.27)	(+1.42 to +5.67)
Maximum summer air temperature anomaly at 1.5m (°C)	+1.51	+2.79	+4.36	+6.46
	(+0.2 to +2.8)	(+0.95 to +4.71)	(+1.55 to +7.22)	(+2.87 to +10.21)
Minimum winter air temperature anomaly at 1.5m (°C)	+0.91	+1.70	+1.28	+3.71
	(+0.04 to +1.89)	(+0.4 to +3.14)	(+0.65 to +4.87)	(+1.27 to +6.48)

Table 1-3: Projected Change in Precipitation Rate in South East England

	Time Horizon (relative to 1981-2000)			
Climate Variable	2020-2039	2040-2059	2060-2079	2080-2099
Annual precipitation rate anomaly (%)	+1.27	-0.48	-0.38	-1.13
	(-5.42 to +8.12)	(-8.39 to +7.72)	(-10.95 to +10.43)	(-12.65 to +11.09)
Summer precipitation rate anomaly (%)	-5.93	-16.79	-24.11	-41.4
	(-29.34 to +17.37)	(-44.81 to +12.03)	(-56.64 to +10.76)	(-71.21 to +0.58)
Winter precipitation rate anomaly (%)	+8.06	+12.56	+20.39	+26.01
	(-4.59 to +21.95)	(-3.86 to +31.56)	(-4.03 to +48.12)	(-1.69 to +59.79)

Table 1-4: Projected maximum summer temperatures during extreme heat days, in the 587500.00, 112500.00 grid cell for the Project

	Time Horizon (relative to 1981-2000)			
Climate Variable	2020-2039	2040-2059	2060-2079	2080-2099
	+35.22	+36.34	+37.79	+39.44

	Time Horizon (relative to 1981-2000)			
	2020-2039	2040-2059	2060-2079	2080-2099
Extreme (1 in 100 year) maximum summer air temperature at 1.5m (°C)	(+33.81 to +36.71)	(+33.95 to +38.82)	(+34.10 to +41.55)	(+34.27 to +44.67)

Table 1-5: Projected precipitation during extreme rainfall events, in the 587500.00, 112500.00 grid cell for the Project.

Climate Variable	Time Horizon (relative to 1981-2000)			
	2020-2039	2040-2059	2060-2079	2080-2099
Extreme (1 in 100 year) 1-day total precipitation in winter (mm)	+35.60 (+31.14 to +40.18)	+37.12 (+31.95 to +42.33)	+39.07 (+32.77 to +45.43)	+41.29 (+33.47 to +49.20)
Extreme (1 in 100 year) 5-day total precipitation in winter (mm)	+68.29 (+65.06 to +71.53)	+70.83 (+66.05 to +75.73)	+74.13 (+67.11 to +81.30)	+77.89 (+68.18 to +87.65)



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