Appellant's Response to Longhedge Planning Inspector – Longhedge Solar Farm Capacity

1. The Appellant has been asked to submit a concise written statement why its proposed development falls within the Town and Country Planning Act 1990 (TCPA90) and is not a Nationally Significant Infrastructure Project governed by the Planning Act 2008 (PA08).

2. S15 PA08 provides that an onshore generating station is an NSIP when it has a capacity of more than 50 megawatts (MW).

3. PA08 provides no further definition of generating capacity, however NPS EN-3 provides guidance on how that figure should be calculated (para 2.10.53) together with further guidance on capacity and size of solar developments (paras 2.10.50 to 2.10.58 and 2.10.17 – attached overleaf).

4. Applying that guidance to the Longhedge appeal, as the proposed development has a total inverter capacity under 50MW that indicates it is properly considered under TCPA90. Applying the other guidance provided in EN-3 also indicates that it complies with the EN-3 description of a sub 50MW solar development.

	Site Specific Figures for Longhedge Original Layout 565W[1]	**Site Specific Figures for Longhedge Appeal Layout 610W**	**EN3 guidance/reference**
Application Site Area (redline boundary in acres)	233	222	n/a
Application Site Buildable Area (acres)	166	157	125 to 200 acres for 50MW (EN-3 para 2.10.17)
Solar Panels (maximum number)	147368	128752	100,000 to 150,000 for 50MW (EN-3 para 2.10.7)
Candidate panel power rating (Watts)	565W	610W	n/a
Inverters[2] (number of)	28	26	n/a
Maximum Export Capacity (legal grid limit, MWac)	49.9	49.9	n/a
Total maximum inverter capacity (MWac)	49.9[3]	49.9	n/a
MWdc	83.26[4]	78.54	n/a
dc/MEC ratio	1.67	1.57	n/a
Development density (Application Site Buildable Area (acres)/MWdc)	2.79	2.82	2 to 4 acre/MWdc (EN-3 para 2.10.17)

[1] No specific panel power rating has been given in the planning application, but these two examples are indicative of panels that might be used. This footnote applies to both 565W and 610W columns in the table above.

[2] The exact specification of the inverters will be finalised at the procurement stage due to the technology continually advancing, but in no circumstances will exceed the combined total of 49.9MWac as referred to in footnote 3.

[3] No specific capacity for individual inverters has been given in the planning application but the total combined capacity cannot exceed the MEC of 49.9MWac, excluding any capacity to overcome reactive power consumption within the solar farm between the inverters and the connection point, per EN-3 footnote 91. Footnote 3 of this document applies to both 565W and 610W columns in the table above.

[4] The dc capacity in excess of 49.9MW is what is described as "overplanting" in EN-3 para 2.10.55 and footnote 92. This applies to both 565W and 610W columns in the table above.

To ensure that the Planning Inspector's questions in the document entitled 'Inspector's note and timetable' in the email received on Wednesday 10th April at 13:22 are answered clearly, further details are provided below:

- Inspector's question: candidate design for the proposed bifacial panels:
    - Appellant's response: See footnote 1 in the table above. As with inverters, solar panel technology is continually advancing, and in the time between the original submission and the appeal submission, the technology had moved on. Both designs fall within the parameters specified in the PV module drawing of the planning application - Figure 8 Typical PV module and rack detail.

- Inspector's question: number of panels:
    - Appellant's response: 147368 for the original layout, for 128752 for the appeal layout.

- Inspector's question: number and capacity of inverters:
    - Appellant's response: 28 for the original layout, 26 for the appeal layout with a total maximum capacity of 49.9MWac.

- Inspector's question: client/DNO substation connection and route for cabling:
    - Appellant's response: the connection between the National Grid Electricity Distribution Network and the Client/DNO substation can be found in the planning application at Figure 12A Client/DNO substation plan & elevation option 1, and Figure 12B option 2.

- Inspector's question: predicted annual output of renewable energy from the appeal scheme:
    - Appellant's response: the output of the Longhedge Solar Farm is 49.9MWac which is unchanged between the original and appeal layouts, which equates to the electricity required to serve approximately 15,200 homes each year. There is no standard formula for calculating homes served, and different methodologies will result in slightly different figures.

- Inspector's question: clarify any discrepancies between the details submitted with the application, in the appellant's Statement of Case, and the appellant's draft Statement of Common Ground:
    - Appellant's response: The original Planning Application stated 160888 modules, the Appeal Statement of Case stated 139568 modules, which is a smaller number reflecting the reduction in site area between the original design and the appeal design. The precise number is however dependent on the panel rating, and the table above provides two examples of power ratings that could be used and the panel numbers that would result. However, an approved design would be principally limited by the development areas shown in the suite of planning drawings. A precise number of panels would be dependent upon the actual panel type procured at the point of construction.
    - In respect of annual output, this information is unchanged as the information shared to date states an output of 49.9MWac which equates to the electricity required to serve approximately 15,200 homes each year.

16.4.2024

NPS EN-3 Extracts

2.10.17 Along with associated infrastructure, a solar farm requires between 2 to 4 acres for each MW of output. A typical 50MW solar farm will consist of around 100,000 to 150,000 panels and cover between 125 to 200 acres. However, this will vary significantly depending on the site, with some being larger and some being smaller. This is also expected to change over time as the technology continues to evolve to become more efficient. Nevertheless, this scale of development will inevitably have impacts, particularly if sited in rural areas.

Capacity of a site

2.10.50 Solar panels generate electricity in direct current (DC) form. A number of panels feed an external inverter, which is used to convert the electricity to alternating current (AC). After inversion a transformer will step-up the voltage for export to the grid. Because the inverter is separate from the panels, the total capacity of a solar farm can be measured either in terms of the combined capacity of installed solar panels (measured in DC) or in terms of combined capacity of installed inverters (measured in AC).

2.10.51 For the purposes of determining the capacity thresholds in Section 15 of the 2008 Act, all forms of generation other than solar are currently assessed on an AC basis, while a practice has developed where solar farms are assessed on their DC capacity.

2.10.52 Having reviewed this matter, the Secretary of State is now content that this disparity should end, particularly as electricity from some other forms of generation is switched between DC and AC within a generator before it is measured.

2.10.53 From the date of designation of this NPS, for the purposes of Section 15 of the Planning Act 2008, the maximum combined capacity of the installed inverters (measured in alternating current (AC)) should be used for the purposes of determining solar site capacity.

2.10.54 The capacity threshold is 50MW (AC) in England and 350MW (AC) in Wales.[91]

2.10.55 The installed generating capacity of a solar farm will decline over time in correlation with the reduction in panel array efficiency. There is a range of sources of degradation that developers need to consider when deciding on a solar panel technology to be used. Applicants may account for this by overplanting solar panel arrays.[92]

2.10.56 AC installed export capacity should not be seen as an appropriate tool to constrain the impacts of a solar farm. Applicants should use other measurements, such as panel size, total area and percentage of ground cover to set the maximum extent of development when determining the planning impacts of an application.

2.10.57 Nothing in this section should be taken to change any development consent or other planning permission granted prior to the designation of this NPS. Any such permission should be interpreted on the basis upon which it was examined and granted.

2.10.58 In particular, any permissions granted on the basis of a DC installed generating capacity should be built on that basis, unless an amendment is made to that permission and the difference in impacts is considered.

91 The combined maximum AC capacity of the installed inverters may only exceed the aforementioned thresholds for the sole purpose of overcoming reactive power consumption within the solar farm between the inverters and the connection point.

92 “Overplanting” refers to the situation in which the installed generating capacity or nameplate capacity of the facility is larger than the generator’s grid connection. This allows developers to take account of degradation in panel array efficiency over time, thereby enabling the grid connection to be maximised across the lifetime of the site. Such reasonable overplanting should be considered acceptable in a planning context so long as it can be justified and the electricity export does not exceed the relevant NSIP installed capacity threshold throughout the operational lifetime of the site and the proposed development and its impacts are assessed through the planning process on the basis of its full extent, including any overplanting.