Solar Installation Estimated HGV Movements

24/01859/FUL planning application

1. Overview

The purpose of this review of the Solar Installation project is to establish an estimated baseline of weights for solar panels, mounting frames, fencing materials, trackway and hard standings required to build this 30MW site. And to thereby make an estimate of the number of HGV movements involved in the construction phase. This calculation is in the absence of any estimate provided by the applicant.

2. Solar Panel Requirements

For 30MW nominal output:

400W Panels Required	75,000
Estimated Weight of Panels (22kg ea)	1,650 T
600W Panels Required	50,000
Estimated Weight of Panels (32kg ea)	1,600 T

The developer has quoted a figure of "200 two-way HGV movements will be generated during the entire construction period" (Ref CTMP para 4.3.2), but this calculation suggests that figure only covers the transport of the solar panels.

3. Mounting Frames

Frames Required [est 6 panels per frame]	12,500
Estimated Weight of Frames	750 T

4. Fencing Materials

Estimated Fencing Length	18 km
Estimated Weight of Fencing	350 T
Estimated Support Posts Required	7200
Estimated weight of posts	180 T

5. Transformer Requirements

With a capacity of 5 MW each:

Transformers	7
Estimated total weight of transformers	210 T
Estimated transformer base weight	120 T

For each transformer base with dimensions 6 m x 2.4 m and an assumed depth of 0.5 m: 7.2m^3 .

6. Trackway & Hard Standing Requirements

Estimated Trackway Length	3.5 km
Trackway Area	12,250 m2
Estimated Ballast Weight (assumed 0.2m depth)	5,000 T
Estimated hard standing areas	3,500 m2
Estimated hard standing Ballast	2,700 T

Ballast specified as Class 1C by applicant.

Estimated HGV Loads for 30MW solar farm installation:

	Estimated weight T	**Approx HGV loads**
Solar Panels	1,650	100
Mounting Frames	750	40
Fencing (Wire Mesh)	350	20
Support Posts	180	10
Transformers	210	7
Transformer bases	120	7
Trackway ballast	5,000	280
Hardstanding ballast	2,700	150
Total Estimated Weight	**11,000**	
Total HGV @ 18 T ea		**615**

Dudman HGV: nett 18 T maximum ballast load

These figures are all estimates based on information published by the applicants and are one way HGV movements. They all require confirmation/updating before the application is considered by the LPA.

For the western site all loads will be transported down Runcton/Bowley Lanes. As a first approximation it is assumed that about 50% of this traffic will be involved ie circa 600 HGV 2 way movements down these narrow country lanes during the construction phase.

The applicants have made no comments about the mid life replacement of all of the PV panels. This would entail about another 200 2-way HGV movements to deliver the new panels and potentially a similar number of movements to remove the old panels.

7. Sources and References

1. British Photovoltaic Association Guidelines for Solar Farms.

- The British Photovoltaic Association has provided guidelines focusing on agricultural good practices for solar farms, emphasizing minimal ground disturbance and effective land use.
- Agricultural Good Practice Guidance for Solar Farms

2. National Grid Connection Standards (UK).

- The National Grid outlines the standards for connecting to the electricity transmission system, detailing the technical requirements and procedures.
- National Grid - Connection Guaranteed Standards of Performance

3. Industry-standard solar panel specifications and material densities.

- Modern solar panels typically weigh around 22 kg each, with capacities varying based on technology and manufacturer specifications.
- Planning for Solar Farms - House of Commons Library

4. Civil Engineering Practices for Trackway Construction:

- Standard practices involve minimal ground disturbance, with infrastructure typically affecting less than 5% of the ground area.

  Agricultural Good Practice Guidance for Solar Farms