

KS SPV 66 Ltd • 14 High Cross • Truro TR1 2AJ Cornwall

TO Chris Johnston
FAO Planning Officer
ADDRESS Moorlands House, Stockwell St.,
Leek, ST13 6HQ

FROM Eleonora Rigo
Kronos Solar Projects GmbH
ADDRESS Petersplatz 10
80331 München
TEL. +49 (0)89 8905 708-37
FAX +49 (0)89 255 513 1051
E-MAIL eleonora.rigo@kronos-solar.de

DATE 13 October 2021

SUBJECT. Screening for a photovoltaic park at Draycott in the Moors, Staffordshire Moorlands

Dear Chris Johnston,

We are pleased to hereby send you our screening opinion for the proposed photovoltaic park in Staffordshire Moorlands, north of the Middleton Green village.

We are looking forward to your feedback. Please do not hesitate to contact us at any time in case you have remarks or questions around the following content.

Kind regards,

Kronos Solar Projects GmbH

Eleonora Rigo

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1. QUICK INTRODUCTION TO KRONOS SOLAR PROJECTS GMBH

The Kronos Solar Projects GmbH, hereafter Kronos Solar, is a photovoltaic (PV) park developer with a head office located in Munich, Germany, from where the company has operated internationally for many years. Since our inception, we have completed over 40 large-scale solar park installations, many of them in the UK. We have significant experience in the design, planning, development, construction and maintenance of PV parks for both roof-top as well as free-field/standalone applications. As a comprehensive PV developer, we operate alongside the complete value chain from the identification of suitable sites to the delivery of turnkey ready PV parks. In this context, we provide both the technical expertise and the financial means to bring projects to life.

2. INTENTION OF THIS SCREENING OPINION

Kronos Solar is acting on its own behalf. Based on Regulation 5 of the Environmental Impact Assessment (EIA) Regulations, we kindly ask for a screening opinion by the Staffordshire Moorlands District Council Planning Authority to confirm if this proposal is a Schedule 2, Class 3 project and if an EIA is required.

Given that our development is intended for the production of electricity and the site has an area of more than 0.5 ha, our intended PV park should be considered a Schedule 2 project. As no specific category for PV parks exists, we consider the proposed project a Class 3 "Energy Industry" development.

3. SITE LOCALITY AND SUITABILITY

The PV Park is a large development comprised of three farms: Blythe Gate Farm, House Farm and Hollies Farm. The farms are located north of Middleton Green, between the A50 and Sandon Rd. The overhead lines passing with towers directly on the fields of the proposed development, provide the presumed point of connection (see Appendix A for an indicative layout of the farm).

The land classification for the selected area is mostly grade 3, which is agricultural land of moderate quality. Several factors make this location unique in its setup and extremely well suited for the development of a PV park:

- This type of agricultural land is not the most efficient for food production and therefore falls into the suitable category for solar developments and alike.
- It is visually nicely separated from large parts of the adjacent environment, not creating an intrusion to the landscape.
- The site is not within any nature protection or archaeological heritage designations (e.g. Green Belt, AONB, SSSI or Local Nature Reserve).
- The site composition (ground, soil, slope, etc.) fit very well with the specific requirements of PV parks.
- The site is clear and the use for a PV park will not require major modifications of the site such as removal of buildings and the like.

4. ENVIRONMENTAL EFFECTS

There will be very little environmental impact during the construction of the PV park and almost none during its 40 years of operation. Based on our experience in diligent construction approach, we will select means of construction, which keep potential environmental effects during construction to a minimum. This will include the application of solar panel mounting systems, which are pile-driven and do not need concrete block stabilizers. Moreover, once the site is constructed, there will be no environmental effects such as noise or pollution.

4.1. Emission and Climate Effects

Solar power replaces energy from fossil energy sources and delivers an important contribution for the reduction and avoidance of CO₂. The energy balance of park is positive already after 2 years. The operational PV park clearly causes no emissions and contributes directly to the local, national and global targets of increasing the share of electricity produced through clean energy sources.

4.2. Nature and Grazing Ground Conservation

The site will become a natural habitat for small animals. With only about a third of the site effectively covered by solar panels, the soil and habitat will remain completely intact and appropriately covered with grass. Also, with significant spare ground between the solar panels, the site can continue to be used as grazing ground. It is a common practice to have sheep grazing between the panels, further contributing to the biodiversity of the soil and efficient use of the land.

4.3. Soil Conservation

There will be practically no sealing of the earth during or after the construction of the park. An important benefit is the regeneration of the earth, which comes as a consequence of not using the ground for farmland during an extended period (40 years). Furthermore, there will be no danger of erosion, or contamination by pesticides, biocides or excessive soil conditioning.

4.1. Water Pollution Control

The PV park will not cause any runoff of nitrates, pesticides, biocides nor harmful chemical substances to the ground water or nearby water bodies. The PV park will also not have an impact on the water storage volume on the site.

4.2. Landscape Effects of the PV Park

The site selected offers an optimal site for a solar development due to its location in a rural setting, by being far from designations and the possibility of connecting to the overhead line directly onsite. Located north of Middleton Green, the land belongs to both Staffordshire Moorlands District and East Staffordshire District. The three development sites are surrounded by agricultural fields and offer enough land to develop a sub 50MW solar park with connection to the national grid system. There are no significant long-distance views from any direction, given that the terrain for the development is slightly undulating mainly with east facing slopes. The short distance views into the site are protected by scattered woodland, hedges and natural vegetation, the only short distance view is from Sandon Rd to the west of the site. These views can be highly restricted by reinforcing existing and mature hedgerows to aid in screening, if necessary following the LVIA results. Other short distance, permanent views do not apply from any direction, as the land is surrounded by further farmland. Overall, no significant landscape effects are caused by the proposed development.

Furthermore, the initially suggested solar panels and mounting systems will have a height of maximum 3 meters. Based on the hedgerows around the ground, this will create a minimum visual impact. Clearly, both the design of the mounting systems and the landscape protection i.e. through hedges will be detailed out, and are subject to consultation. A complete LVIA will be part of the application to analyse potential impact.

4.3. Cultural Heritage / Archaeology

Based on our current analysis of the site, we do not foresee any negative impact on cultural heritage and archaeology.

5. TECHNICAL INFORMATION OF THE PROPOSED PV PARK

5.1. PV Park Construction

For the construction of the solar park, a pile-driven steel sub-construction will be used to cause minimal sealing of the surface and it is fully removable after the period of operation of 40 years (See Figure 1). The construction fulfils all static requirements, it is flexible in height and length of the tables, as well as in the number of mounted modules and the module angle.

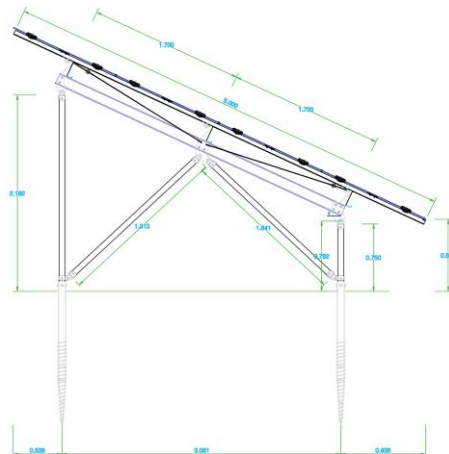


Figure 1. Example of a common steel sub-construction used in Germany, Spain and Italy. More than 200 MWp of PV parks were built with this construction.

A PV park is usually designed in rows of module tables, which go from the east to the west. As a result, the module surfaces are oriented towards the south to capture as much radiation as possible during daytime. This is illustrated in Figure 2.



Figure 2. Module tables oriented towards the south.

A table is usually between 10 and 50 m long depending on the requirements and the shape of the site. The lower border of the table will be at least 80 cm above the ground (See Figure 3) and the construction will have a maximum height of 3 m. Modules will be typically mounted in 2 to 6 rows on a table in an angle between 15 and 30 degrees. All of these elements are exemplary and will be subject to consultation in the process of planning of the proposed development.



Figure 3. Lower border of module table 80 cm above the ground.

Sufficient spacing between individual module tables is also accounted for in the design of the PV park to avoid one table throwing a shadow on the next one, as shown in Figure 4. As a result, usually not more than one third of the site surface will be covered by module tables.



Figure 4. Distance between module rows in a PV park.

Another important aspect of a PV park is the way it is electrically connected. The modules on a table are connected to each other in series in what is called a module string. The strings are connected to inverters that convert the DC power produced by the modules into the AC power needed by the grid when feeding in electricity. In general, multiple inverters are required for a solar farm. Central inverters each with a capacity of 1 MWp are used in smaller scale PV parks, such as the one shown in Figure 6, but string inverters are preferred for larger PV parks since they provide better efficiency.

Inverters contain transformers to reach the voltage level of the closest grid access point (11 kV / 33 kV / 132 kV) and together they are usually placed in a pre-fabricated box like the one in Figure 5. This way, the noise emitted from inverters is strongly mitigated and is at least 28dB at a distance of 50m (considering 73dB at the source).



Figure 5. Example of a 20 kV / 400 kV transformer station.



Figure 6. Central inverter from SMA (left) and string inverter from Huawei (right) .

5.2. Ongoing Operations

Once the PV park is built, the scheme requires minimal maintenance efforts. Experience shows that the modules are sufficiently cleaned by rainfall and the monitoring of its performance is done via Internet. Thus, requiring personnel to enter the PV park is only necessary for repair or maintenance purposes and for mowing the lawn. However, for the latter purpose, it is very common to allow grazing sheep in PV parks.



Figure 7. Sheep grazing in a PV park.

6. ASPIRED PLANNING APPLICATION

A map of the proposed PV park can be seen in Appendix 1, showing the site boundaries with red line. We seek full planning permission for a sub 50 MW PV Park along with complementary equipment.

7. SCREENING OPINION

From the perspective that the proposed PV park falls into the category “Schedule 2, Class 3” developments of the EIA regulations, it is clear that the scheme is subject to a screening opinion to define if a complete EIA is required. The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 set out basic questions to be asked, to ultimately answer if this particular development is likely to have significant effects on the environment.

To address this question, Schedule 3 of the EIA Regulations provides guidance on to how to assess "significant effects" under three main headings, which are individually analysed according to the development. The headings are:

- The characteristics of the development,
- The environmental sensitivity of the affected location(s), and
- The characteristics of the potential impact.

Paragraph 017 of the EIA Guidance states, furthermore, that “to aid local planning authorities to determine whether a [Schedule 2] project is likely to have significant environmental effects, a set of indicative thresholds and criteria have been produced”. Although universal thresholds are not possible, it is generally assumed that an EIA is likely necessary for:

- a) Major developments, which have characteristics above the thresholds in Column 2 of Schedule 2.
- b) Developments located in particularly environmentally sensitive areas or vulnerable locations.
- c) Developments with unusually complex and potentially hazardous environmental effects.

Considering the statements of the Guidance and our provided description of PV parks, our initial perspective on the proposed project is that:

- PV parks are not of more than local importance in their effects since they will have a limited impact on the local landscape and ecosystem. Their scale does not render trans-frontier nature impacts and their prominence is restricted to the local environment. Although the proposed development is of a larger scale and lies above the threshold for Schedule 2, Class 3 developments, PV parks are not explicitly categorized in any Class.
- The proposed PV park is not located in any particularly sensitive location, such as a Site of Special Scientific Interest, a Designated Landscape Area or alike.
- There are no unusual or complex processes or potential negative effects. As energy from the sun is collected and sent back to the grid, the possibility of on-site processes that may be hazardous or have secondary environmental consequences is eliminated.

The 2015 Renewable Energy and Low Carbon Guidance of the National Planning Policy highlights the necessity of increasing green energy developments as long as they are within suitable areas. Specifically for ground-based solar parks, the guidance suggests that planning authorities consider the following points when encouraging such developments:

- Effective use of land by focusing on previously developed, non-agricultural land and land of poor quality, as well as continued agricultural use.
- The temporary nature of solar farms allows for the recuperation of the soil after the removal of the installation at the end of its lifetime.
- Visual impacts and security including glint, glare, lighting, fencing and screening native with hedges.
- Conservation of natural and historic assets.

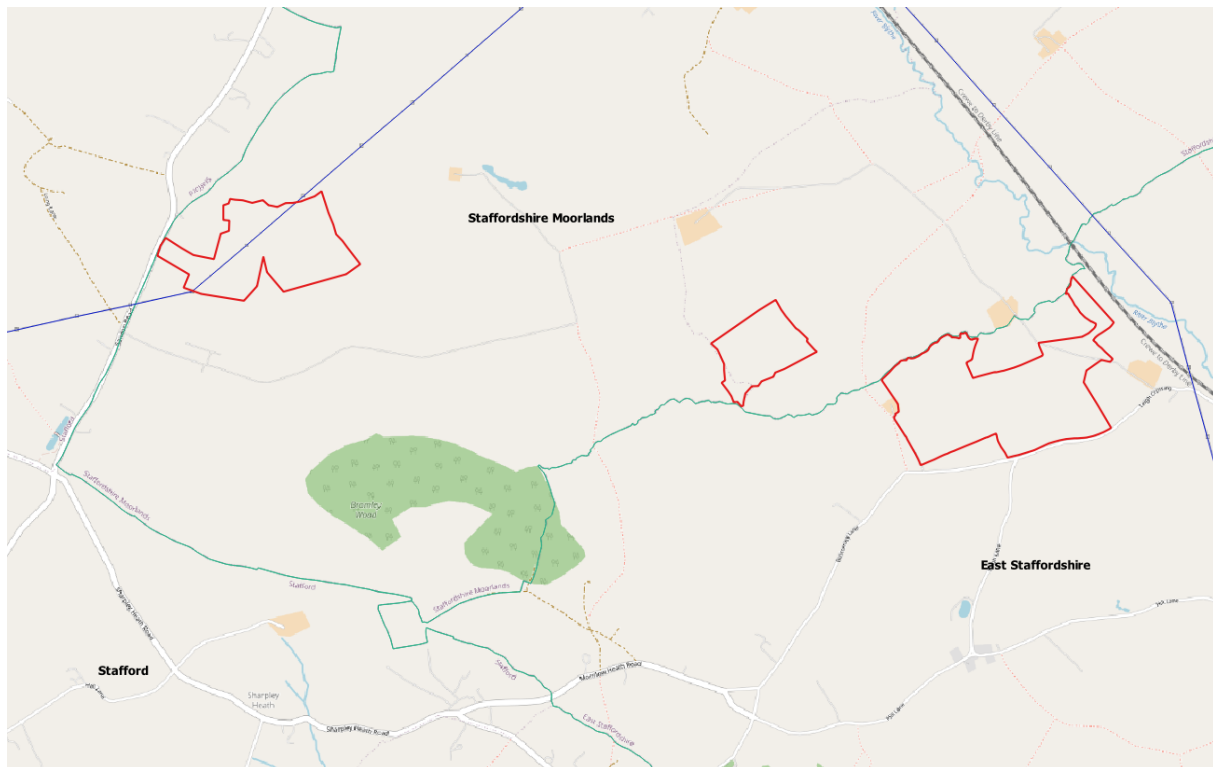
Against these points, the impacts of the development are minimal. To summarize, the development is proposed on land of ALC grading 3, it would allow for grazing of the land during the 40 year operation of the scheme and it is also not within or close to any heritage assets. Any possible visual impacts will be assessed through an LVIA and environmental mitigation effects will be assessed through an EIA, if at all required. With this in mind, the proposed development is not expected to have "significant effects" on the surrounding environment. We, therefore, think an EIA is not required.

We would like to request an informal scoping opinion by the Planning Authorities in any case, in order to analyse the criteria for an environmental report which will complement the planning application.

8. MITIGATION MEASURES

The environmental report will, if at all applicable, identify possible and adequate mitigation measures for eliminating or reducing the impacts caused by the development of the PV park.

Appendix A1. Suggested Draycott PV Farm site (edged in red)



Appendix A2. Suggested Draycott PV Farm site (edged in red)

