Solar parks are a recent addition to the UK’s diverse energy generation portfolio. Their deployment over the past 18 months has been driven by the introduction of the feed-in tariff in April 2010 which made their development economically attractive.

Solar parks typically tend to fall within Sch.2 (3a) of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, (industrial installations for the production of electricity, steam and hot water). They usually have a site area exceeding half a hectare and an installed capacity of under 300MW. This means the requirement for an environmental impact assessment (EIA) is determined on a site-by-site basis.

The primary constituent of a solar park is the array of solar photovoltaic (PV) modules which convert sunlight into electricity. They are usually configured in rows or “strings” across a site, with spaces in between to minimise shading.

The PV modules are mounted on metal frames which are hammered into the ground and the strings are interspersed with inverters, switchgear and other electrical equipment. The development is then typically surrounded by a security fence.
While the majority of solar parks are located away from sensitive areas to avoid the requirement for a formal EIA, a certain amount of environmental assessment is still required to provide local planning authorities with sufficient information to reach an informed decision.

**The effects**

Solar parks have the potential for a variety of environmental effects namely:

- landscape and visual effect,
- traffic from construction,
- archaeological,
- ecological, and
- potential loss of agricultural land.

The landscape and visual effects of a solar park are likely to be the most significant as development sites usually comprise southerly sloping sites. These effects can often be mitigated through the careful planting of trees and hedgerows to provide sufficient screening from sensitive viewpoints.

With PV panels designed to absorb and not reflect light, irradiation, the potential for glint and glare to occur, is limited. However, in some instances it may be necessary to undertake a glare assessment should the site be in close proximity to an airport.

**The benefits**

Development of solar parks offers the potential to create enhancements to the ecological interest of sites, particularly where land is removed from intensive agricultural production.

Ecological potential can be maximised by encouraging and promoting a diverse range of habitats within developments, such as wildflower meadows, and by designing and adapting built structures, such as control buildings, to promote nesting, roosting or hibernating animals such as bats.
Arrays are typically installed using pile-driven (see picture) or screw foundations which are capable of easy removal, therefore, allowing the site to be easily restored to agricultural use. Intrusive development such as trenching and foundations has the potential to disrupt ground use and should be minimised where possible. However, this relatively low-impact form of development limits the potential for an effect on below ground heritage features.

**Flood risks and noise**

In site areas that are larger than one hectare a flood-risk assessment is usually required to support a planning application, in accordance with government guidelines.

The purpose of the flood-risk assessment is to provide sufficient information to demonstrate that future users of the development would remain safe throughout its lifetime, that the development would not increase flood risk elsewhere and, where practicable, that the development would reduce flood risk overall.

Rain falling onto panels will runoff directly into the ground beneath the panels and, due to the permeability of the underlying soil, partly infiltrate into the ground as it does in greenfield sites. A swale can be introduced along a site’s lowest boundary to intercept any extreme flows which could be considered a reduction in surface water flow from a site.
When considering noise effects, it is unlikely that there will be any resulting from the actual operation of a solar park, as there are no moving parts. However, there may be noise impacts associated with the movement of vehicles in the construction phase of a development, and as such consideration should be given to the routing of construction traffic and timing of deliveries.

It can be stated with some confidence that the development of solar parks is a relatively low-impact technology when compared with other forms of renewable energy generation.

This article was written as a contribution to the EIA Quality Mark’s commitment to improving EIA practice.

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