

Penderi Solar Farm EIA



The Demand for Solar Farms

- ▶ To meet global net-zero GHG emissions by 2050 – investment in renewables need to rise to \$1.6 trillion per year (Biol, 2021)
- ▶ Solar currently accounts for 50% of green energy market (REN21, 2020)
- ▶ Between 2025 and 2040, solar parks will provide the cheapest electricity ahead of offshore or onshore wind, gas, and nuclear (BEIS, 2020)
- ▶ Welsh targets – generating 70% of electricity consumption by 2030 (Welsh Government 2017)

Environmental Impacts of Solar Farms

Negative Impacts

- ▶ Loss/fragmentation of habitat
- ▶ Mortality/injury due to collisions
- ▶ Increase in invasive species
- ▶ Change to microclimates
- ▶ Physical barriers to movement and gene flow
- ▶ Soil sealing, erosion and shading
- ▶ Impact on carbon cycle and seed banks

(Lovich & Ennen, 2011; Agha et al., 2020; Kagan et al., 2014, Delfanti et al., 2016; Smith & Dwyer, 2016)

Positive Impacts

- ▶ Conservation gain when sited on intensively managed farmland, brownfield or contaminated land.
- ▶ Creation of new habitats
- ▶ Enhanced biodiversity - planting/sowing new species
- ▶ Managed to benefit vulnerable species
- ▶ Recreation and education resource
- ▶ Source of pollinators for surrounding land

(Semeraro et al., 2018; Montag et al., 2016; Beck et al., 2012; Weinzettel et al., 2013)

Penderi Solar Farm EIA Process



Legal Framework

- ▶ EIA Directive (2014/52/EU)
- ▶ Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017
- ▶ Habitat Regulations Assessment (HRA)
- ▶ Development of National Significance (DNS)

Penderi Solar Farm EIA Process

- ▶ Scoping Direction received from Planning Inspectorate on chapters to be covered - including need to reference cumulative effects and additional reports on visual impact
- ▶ Consultation - statutory and non-statutory, including well-attended presentations, meetings with community councils, letters, leaflet drop
- ▶ Mitigation - design changes during planning process, and protection and enhancement measures provided within Construction Ecological Management Plan (CEMP) and Landscape Ecological Management Plan (LEMP)
- ▶ Post-construction monitoring - Habitat survey (Years 1,5,10,15,20)
 - Over-wintering Birds (Years 2,5,20)
 - Annual review by steering group

Landscape and Visual

- ▶ Physical landscape will be largely unaltered, except for additional plantings of trees and hedgerows
- ▶ Significant visual impact on residential properties - Residential Visual Amenity Assessment
- ▶ Consultation led to design changes - removal of panels from patch of fen and prominent areas within site, additional screening with hedgerows and trees
- ▶ Cumulative effects discussed in this chapter but only in relation to visual impact on humans, not discussed in relation to habitat fragmentation, impact on wildlife.

Ecology and Nature Conservation

- ▶ Habitat Regulation Assessment Screening Matrix - no significant effect on 4 European protected sites due to distance and unlikelihood of sediment or pollution reaching that far, lack of shared habitats and disturbance.
- ▶ Majority of impacts expected during construction - dust, damage, disturbance, removal of hedgerows
- ▶ Mitigation and enhancement through CEMP and LEMP
- ▶ Monitoring - Site to be surveyed for next 20 years (not every year)
- ▶ Existing site semi-improved agricultural land, LEMP should lead to enhanced biodiversity

Conclusion

- ▶ Process began in 2015, restarted under Developments of National Significance (DNS).
- ▶ Comprehensive EIA process following scoping direction
- ▶ Does the EIA process address potential environmental impacts of solar farms?
- ▶ Community benefits not part of formal process - disproportionate impact on local community
- ▶ Amendments to planning, further consultation, additional reports, pandemic, and need to reference Future Wales, The National Plan 2040 led to delays and extended timescales - decision imminent.

Further Discussion

- ▶ Need for further research specific to the environmental impact of solar farms on wildlife and habitats.
- ▶ How can the EIA process adequately address cumulative effects on wildlife?
- ▶ Does the generic monitoring process after construction adequately identify potential impacts on wildlife, such as mortality by collisions, habitat fragmentation, soil health, etc.
- ▶ Community Benefits - should they formally be included within EIA process?

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