

I live in the rural community of Sturton by Stow, currently being threatened by solar farms, which in total amount to 10,000 acres (16.25 square miles of glass panels 4.5 metres high) and if approved, will surround us completely, ruining the agricultural, picturesque, and historical landscape of the Trent Plain.

It is almost impossible to separate the harmful effects of each of the solar projects because they combine to despoil the whole area around 30 villages and for this reason they should be considered together, as a complete entity by the Inspectorate, rather than individually.

Climate scientists have predicted we will lose hundreds of square miles of arable land in Lincolnshire around the Wash and low-lying areas of the East Coast due to rising sea levels, despite the UK's efforts to reduce CO2 emissions below 1% of the total global contribution.

The fertile farmland in this part of Lincolnshire has fed the nation since Roman times and the area is often referred to as the 'Breadbasket of Britain'.

Events in Ukraine have recently demonstrated the UK's vulnerability to supplies of imported grain and the effect on cereal prices.

Although the developer claims Gate Burton Energy Park to have a 'potential' output of 500MW, the average annual load factor at northern latitudes is a maximum of 11% and will therefore deliver a maximum average of only 50MW.

Although much is made by the developer of reducing the UK's CO2 emissions, the power generated will not reduce the cost of electricity to the consumer, yet solar farms will receive payments when they are shut down, increasing the cost to the consumer.

The most beneficial siting of solar panels is on the roofs of domestic, commercial, and industrial buildings, where the electrical power generated is supplied and consumed at the point of use, reducing demand on the national grid, and benefitting the consumer directly.

The economic viability of GBEP depends to a large extent on the use of a large battery energy storage system (BESS) of 500MW, which is much larger than its annual average load factor can supply and therefore the battery capacity would be used by the National Grid to store energy generated elsewhere. This brings into question the justification for not siting the BESS at Cottam Power Station and consideration by the Planning Inspectorate under a separate planning application from the National Grid as the main user.

Battery energy storage systems of this size carry the serious risk of fire, explosion, release of toxic gases, water & ground contamination, which cannot easily be controlled and contained by emergency services operating in a rural area with poor access and limited resources.

Cottam PS is sited well away from populated areas, is supervised, contained, controlled, already has adequate water supplies and good road access for the Nottinghamshire Fire Brigades, which have attended serious fires at this location in the past, when the station was operational.

The 400kv connection to the National Grid currently being considered at Cottam would be far better utilised by receiving the output from several small modular nuclear reactors (SMR's), which would provide a continuous source of zero carbon electricity, not intrude on the landscape, nor take up productive farmland.

Cottam is uniquely suitable for SMR's by its remote location, cooling water supplies and grid connections and should be considered as part of the national infrastructure strategy extending into the future.

The visual impact of 1,690 acres (2.64 square miles) of 4.5-metre-high solar arrays cannot be underestimated, trivialised, or ignored and will blight the landscape around Gate Burton for the next 60 years.

Covering this huge area with inclined 4.5-metre-high glass panels will also prevent the natural mitigation of surface water runoff by the soil during periods of heavy rain and storm conditions.

It is ironic when a local builder recently block-paved 300 square metres of my driveway, which slopes towards the public road where a road drainage gully delivers directly into the Sturton by Stow Parish Drain, it was a legal requirement to excavate a 6 cubic metre surface water infiltration chamber beneath the drive to comply with Defra's Sustainable Drainage System (SUDS) Directive, enforced by the Local Authority.

Yet, despite Defra's concerns to prevent local flooding from impervious surfaces, there appears to be no similar requirement for the GBEP developer to prevent storm water running off an estimated 3.5 million square metres of glass into the drains and ditches which deliver into the River Till, along with the storm water from the other 3 projects, all of which are sited on the River Till catchment area.

Using the same formula adopted by Defra's SUDS Directive for rainwater infiltration, the GBEP developer would have to provide a storage capacity of 70,000 cubic metres to contain the surface water run-off from its solar arrays.

The developer has provided very limited capacity, or facility for rainwater mitigation and has given the flooding risks scant consideration,

Properties along B1241 in Kexby Grange already experience flooding and damage to property on average every 3 years, due to overflowing of the Padmoor Drain under storm and meltwater conditions.

Land drainage from Gate Burton, Cottam, West Burton and Tillbridge Solar 'Parks' all drain into the catchment area of the River Till, which is pumped up into the Fosdyke Navigation Canal at Odder to the west of Saxilby and then flows into the Brayford Pool in the centre of Lincoln.

Under storm conditions, when the water level in the River Witham is high, the Environment Agency and Upper Witham Drainage Board routinely turn off the transfer pumps on the River Till to prevent flooding around the Brayford Pool in centre of Lincoln, causing the River Till to overflow its flood banks, inundating farmland and the access roads to the villages of Stow, Sturton by Stow, Bransby and Broxholm.

I have serious concerns about the restriction of access to remote communities by emergency services due to the increased flood risk arising from all four Solar projects.

High water levels in the River Till also exacerbate flooding problems over 10 miles away, due to rising water levels in drainage dykes delivering into the Till.

When one considers the storm water run off from 10 square miles of solar panels delivering onto the catchment area of the River Till, the flooding will be spectacular, and no amount of 'mitigation' by the developers will equal that already provided by the soil itself and the existing drainage systems, which have stood the test of time.

Most of the soil on the proposed development areas has a high clay content, which despite its ability to hold moisture and

produce high crop yields, becomes saturated during prolonged periods of heavy rain, allowing excess water to shed off directly into the dykes.

Another characteristic of clay soil is its hard, impervious nature when dry, following a drought, when rainwater from a sudden storm will run off faster than it can be absorbed.

The GBSP development would change the whole character of the environment from a rural and pastoral landscape into one of the largest industrialised areas in the world with a significant impact on the rich diversity of wildlife which currently inhabit the fields, ditches, and hedgerows.

Insufficient effort has been made by the developer to determine the effects of the changes in hydrology on aquatic vegetation, invertebrates, flora, fauna, wildlife in general in the dykes, ditches and the River Till.

Much of the land being appropriated is owned by landlords who do not live in the area and rent their land to tenant farmers who stand to lose their livelihoods if this scheme, along with others in the area is approved, with a consequent loss of farming skills and agricultural output on which the nation depends.

The reflected glare from the panels would be a hazard to motorists travelling along the A156, A1500, B1241, Knaith Hill, and affect commercial aircraft & gliders from local airfields at Sturgate and Kirton in Lindsey, which regularly use the airspace above the Trent Valley.

The upheaval and disruption caused by the installation of thousands of tons of solar panels, together with cable connections, inverters, transformers and battery storage systems will be extreme and cause a great deal of inconvenience with access to local communities, restrictions of essential and emergency services along roads, which are already challenging and inadequate.

The sourcing of an estimated 50,000 tonnes of solar panels from countries such as China also raises socio-economic and ethical considerations.

It is estimated that the amount of global CO<sub>2</sub> released to the atmosphere during mining, processing, manufacture & transport of the panels alone would amount to 65,000 tonnes CO<sub>2</sub>.

The developer claims that 500MW of solar energy output would avoid the release of 100,000 tonnes of CO<sub>2</sub>/year.

However, at an average annual load factor of 11%, GBSP would save only 11,000 tonnes and therefore take 6 years to recover the 65,000 tonnes CO<sub>2</sub> released by solar panel manufacture alone.

The heaviest demand for electrical power is in the southeast of England and many people in this part of the Northeast Midlands question why land along the banks of the Thames estuary is not being considered with grid connections to the redundant power station sites of Kingsnorth and the Isle of Grain. rather than take up the valuable productive farmland of Lincolnshire.

This would reduce power transmission losses which over 150 miles are significant, and the annual average load factor is likely to be higher at a more southerly latitude.

A project of this size would never have been considered in the 'home counties' of the southeast.

As a retired Chartered Chemist, Senior Engineer with the CEGB and former Pollution Inspector serving with Her Majesty's Inspectorate of Pollution with the Department for the Environment, solar farm projects such as Gate Burton would never have received operational approval based on their technical and environmental submission.

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