EN010163 – Steeples Reenables

Responses to EN010163-000333 ExA First Written Questions (ExQ1) – 5th January 2025

Fields For Farming

Q1.01.1 AI

With respect to submissions made to date, AI (Chat GBT and Grok Free versions) have been used as a reference tool akin to Google search. All references to third party documentation and Applicants documentation has been cross checked and verified to the best of my knowledge and to information available in the public domain in respect of :

- Cumulative Impact,
- Flood, and
- Traffic

Q7.0.2

STEP Fusion have formally announced that the Development Consent Order (DCO) process will begin in January 2026. The DCO will cover the prototype power plant and associated infrastructure developments across road, rail and river networks. Non-statutory (informal) consultation will start in the local community in January and run for 8 weeks. The process involves a series of exhibitions across the area, they plan to visit including Sturton-le-Steeple, North and South Wheatley, Bawtry, Lea, South Leverton, Misterton, Sturton by Stow, Gringley on the Hill, Clarborough and Retford areas. Source : www.stepfusion.com

FFF note that the ExA have requested that document EN010163-000316-8.7 Report on the Interrelationships with other NSIP Projects.pdf be produced and updated an a regular basis. FFF are of the view that the Cumulative Impact assessment on the village of Sturton le Steeple and the wider community also be updated to reflect the actual cumulative impact that these projects will have, and that the baseline used is that prior to certain major projects being implemented i.e. prior to quarry construction and power station demolition.

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Other planning topics

Air Quality

Time did not allow for discussion of other planning topics and it should be brought to the examiners attention that during the harvest season there are large dust clouds blown by strong winds once the cereals have been harvested. The Trent Valley has its own microclimate that causes strong winds to blow from the south.

I know because my property is on the southern edge of the village and I have been obliged to grow a large, thick hedge to protect my garden. Fences in neighbouring properties regularly blow down in these winds.

During the construction phase of this project, the area in which the panels and associated equipment are to be located will be pounded from the sheer volume of wheels and tracks of the construction vehicles. In dry weather, it will be crushed into a fine powder and blown across the valley by the prevailing winds.

The soils in the valley have been fertilised for many years by Bio solids or sewage sludge fertiliser. These pollutants will be carried in the dust during the construction phase to the surrounding villages and hamlets.

What actions will be taken by the applicant to prevent such occurrences?

EN010163-000333-ExA First Written Questions (ExQ17.)

The applicant has stated that they will establish an equipment storage site off Wheatley Road north of the railway line. How do they plan to distribute the hundreds and thousands of solar panels and steel bracing without driving through the centre of the village? They can only be distributed by using lanes like North Street, Littleborough Road, Fenton Lane and Northfield Road.

These are medieval narrow single carriage lanes at best, mostly without footpaths and will be destroyed by the volume of heavy traffic they will be expected to carry. Northfield road has deep ditches on its north facing side and its verges will be completely obliterated by HGVs in wet weather. *I suggest a one-way system for HGVs using these routes as they are not wide enough and cannot take two HGVs trying to pass each other in wet weather.*

Our constant worry is the depositing of wet soil and mud from RES vehicles driving off the work sites without clearing the mud from their wheels. The water table is less than one metre in this area and the soil is very shallow, less than 12 inches in most places. After heavy rain, the water does not run off and any wheeled vehicles or areas where there is a lot of foot traffic will soon become oozing with mud.

I predict a public outcry when these lanes, essential for local people to access their homes and travel to work, become impassable or gridlocked in wet weather.

The absence of transport questions in the ExA's set of written questions make me wonder if any of our written submissions were ever read. HGV damage to public drains have caused flooding in the River Idle near the Tiln Lane development in Retford.

We have read the horror stories of gridlock and traffic congestion on earlier solar array schemes in the UK and we expect that this proposed scheme will be just as bad if not worse. Our local roads are in a pitiful condition and getting worse as the winter takes its toll. The extra load upon our road surfaces will increased exponentially and we will not see any improvement in the foreseeable future.

The local and county authorities are not regarded with any degree of confidence and road traffic policing is non-existent. We live in the far north of the county and most employees of county hall have never heard of our local villages. Our local MPs fail to answer our questions regarding this development and the ExA failure to allow time for objectors to raise matters such as transport, noise pollution, dust or BESS fires does not inspire confidence that any of our objections carry any weight whatsoever.

EN010163-000333-ExA First Written Questions (ExQ14.)

Noise and vibration

Sturton le Steeple is located in a quiet rural area with relatively low ambient noise levels. At 9 am this morning the noise level measured 52 dBA in my garden with only audible sound being that of the crows and pheasants in the field alongside my property.

Until recently, apart from traffic noise, the relative quiet of the area has been disturbed only by the demolition of West Burton A coal fired Power Station. The opening of Sturton Quarry has led to an increase in noise levels but this has been dependant on the direction of the wind.

The only comparison we can make locally is from complaints from the residents living near the Tiln Solar facility in Retford who have complained of constant loud humming noise from inverters and the loss of WI-FI and Mobile Phone Signals.

The Sturton Renewables project, should it be approved, will completely destroy the peace and quiet of this area for decades to come. The 2 years development and construction phase alone will last 12 hours per day for 6, possibly 7 days a week.

A perceived advantage of solar facilities is that they are silent and only operate during the day. However, facilities with battery energy storage systems (BESS) do result in transformer and inverter operation during the night, There is a real need for acoustic evaluation and noise control with respect to nighttime operations of solar energy components but equipment manufacturers are extremely reluctant to release data on the acoustic output of the equipment they supply. However, while quiet transformers and inverters are available, due to their extra cost, they are generally not a price developers of the solar facility are prepared to pay. Solar energy facilities can be designed to be inaudible, but this is generally achieved only after site evaluation and planning.

The issue of noise matters when solar arrays are built near homes or schools, especially in rural areas where ambient noise levels are lower; they emit nuisance noise whenever there is enough solar power to generate electricity. This noise will impact on the health and well-being of many residents and is perceived by different individuals in numerous ways depending upon age and health. The noise will certainly impact on any nearby residents' amenity, and the recreational amenity of all those using footpaths and other Public Rights of Way on or nearby a solar array site. This pollution will significantly impact our wildlife by disrupting communication, navigation, and foraging behaviours, leading to increased stress, altered habitat use, and reduced reproductive success. Animals rely on sound for crucial life functions, and human-generated noise interferes with these processes, ultimately affecting their survival and the overall health of ecosystems.

from inverters' and the 'significant and detrimental change in the character and appear ance of the area' which would result from the solar installation. Concluding, he said: 'I consider that 40 years is a very significant period in people's lives during which the de velopment would seriously detract from landscape character and visual amenity'. (Appeal Ref: APP/M1005/W/22/3299953, Land north west of Hall Farm, Church Street, Alfreton DE55 7AH)

Solar panel Inverter noise and why do solar inverters make noise at night?

Thermal Expansion and Contraction

Normal Creaking: *Thermal expansion and contraction of the aluminum racks and other components can cause creaking sounds. This is often more pronounced at night as the materials cool down.*

Panel Movement: *Sometimes, the panels themselves can make noise if they are not fully secured or if there is friction between the panels and the rails*.

Inverter Operations

Fan Noise: *Many inverters use fans to cool down, and these can sometimes be audible, especially if the inverter is working hard or if the ambient temperature is high.*

Relay Clicking: *Some inverters make clicking sounds when they switch between different mode which can occur at night if the system is still active.*

Electrical Noise

Transformer Buzz: *Inverters often have transformers that can produce a buzzing sound, especially under heavy load.*

PLC Signals: *Some systems, like those using Enphase microinverters, use Power Line Communication (PLC) to transmit data, which can sometimes cause noise*.

Nighttime Power Consumption

Standby Modes: *Inverters can consume a small amount of power at night, and this can sometimes generate noise.*

Other Potential Issues

Faulty Components: *Sometimes, unusual noises can indicate a failing component, such as* a dying fan.

Loose Connections: *Loose connections can cause arcing and buzzing, which can be dangerou and should be checked*.

What causes solar inverter noise?

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Electrical Noise and Harmonics

Dirty Power: I*nverters can produce "dirty" power, which can cause noise in other devices.*

Harmonics: *These are electrical disturbances that can affect other devices.*

Load Issues

Motor Loads: *Devices with motors, like washing machines, can sometimes cause noise.*

Grounding and Connections

Poor Grounding: *Check inverter are properly grounded.*

Loose Connections: *Ensure all electrical connections are tight.*

Software and Configuration

Firmware Updates: *Updating the inverter's firmware can resolve noise issues.*

EN010163-000333-ExA First Written Questions (ExQ18.)

What steps do RES propose to reduce the risk of fire in BESS installations?

“Despite storing electrochemical energy of many hundreds of tons of TNT equivalent, and several times the energy released in the August 2020 Beirut explosion, these BESS are regarded as “articles” by the Health and Safety Executive (HSE), in defiance of the Control of Major Accident Hazards Regulations (COMAH) 2015, intended to safeguard public health, property and the environment. The HSE currently makes no representations on BESS to Planning Examinations.” *

Synopsis

The area around the West Burton Power Generating site is to become a major hub for solar power generation taking power from sites in the Trent Valley and from across the River Trent from sites in Lincolnshire. At present power generation is limited to West Burton B, a gas fired CCGT plant with BESS storage with a proposed new unit currently In the planning stage.

The original West Burton A site has been selected as a hub for clean energy, and to support future fusion power, a major step in the UK's low-carbon energy strategy. This month, STEP Fusion is beginning a public consultation exercise to engage with local communities about the aim of building a prototype fusion power plant by 2040 with a £2.5 billion government investme in the facility.

A further proposal has been recently announced for an £11 billion nuclear-powered Data centre just 4 miles as the crow flies from West Burton. This will be powered by a Small Modular React (SMR), a type of advanced nuclear fission reactor.

This development along with the 400 Mv substation planned for the former High Marnham site National Grid will result in what the East Midlands Combine County Authority hopes will becom a *Supercluster* of energy projects on the three former coal powered electricity generating sites.

RES BESS installations at West Burton

One of the features of solar power generated electricity is that if it cannot go directly to the grid, it has to be stored in a *lithium-ion* battery until needed. These batteries are stored in large 40 ft containers, called a BESS installation, contain almost 3,700 lithium-ion cells and the area around the forthcoming STEP facility on the West Burton site will be surrounded by dozens of these BESS units.

While Grid-scale lithium-ion battery energy storage systems can play a part in supporting short term grid flexibility, they come with serious, and increasingly visible, risks

into thermal runaway, an uncontrollable, violent chain reaction phenomenon typically triggers fires and even explosions.

These fires cannot be extinguished, and firefighters have to leave the fire to burn out, a process that can take several days. Highly toxic and flammable gases are released that force firefighters to stay upwind of the conflagration and the millions of litres of water used to dampen the area can result in contaminated firewater run-off. Extinguished fires can reignite days or even weeks later.

Subsequent preliminary environmental sampling carried out after a large BESS fire in the USA indicated dramatically increased levels of the heavy metals *nickel, manganese and cobalt* over a 2-mile radius, hundreds to thousands of times above the pre-fire baseline, including detection of nano-sized particles. The area downwind of a fire became contaminated by the fall out from the fire and this included the soil, roads, ponds, streams and other waterways.

During and after these fires, the population from an area of up to 2 miles radius had to be evacuated. The massive market rush for solar power is not yet under pinned by a proper, *legally-enforced government safety framework* despite the well-
known hazards and risks.

Why were BESS fires not included under Section 10 — Other planning topics? Was
it that the applicant didn't feel it prudent to mention this dangerous and almost un-regulated aspect of solar power generation? A major BESS fire or pollution incident at West Burton could have serious implications that may the involve evacuation and possible the temporary closing of the proposed STEP site and CCGT power plants. It would certainly cause a major interruption of local electricity supplies This
may seem far fetched but the experts agree that the question of a large scale lithium–ion battery fire occurring is *not* a question of how, but when.

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***"A letter to the HSE regarding applicability of COMAH to large-scale BESS (dated 25 Nov 20 [18]) received no reply until follow-up letters were sent addressed personally to the Chief Executive on 7 February 2021, with the intervention of Mrs Lucy Frazer MP. We reply from the Chief Executive [19] dated 22 February 2021 stated that "Lithium-ion batteries are considered articles and are not in the scope of COMAH".

We believe the current attitude of the HSE – that even large-scale Lithium-ion BESS are 'articles' best regulated by operators – is not consistent with the law. Unless tested in the Courts however, this throws the entire responsibility for ensuring the safety of major BESS "battery fires" onto the Fire and Rescue Services.

Currently the HSE makes no representation to the Planning Inspectorate in respect of BESS hazards."

Safety of Grid Scale Lithium-ion Battery Energy Storage Systems

EurIng Dr Edmund Fordham MA PhD CPhys CEng FInstP
Fellow of the Institute of Physics Dr Wade Allison MA DPhil
Professor of Physics, Fellow of Keble College, Oxford University
Professor Sir David Melville CBE FInstP Professor of Physics,
former Vice-Chancellor, University of Kent

Sources of wind and solar electrical power need large energy storage, most often provided by Lithium-Ion batteries of unprecedented capacity.

Incidents of serious fire and explosion suggest that the danger of these to the public, and emergency services, should be properly examined.

Final Comment:

The fundamental failure mode of Li-ion batteries presenting major hazard is thermal runaway. This paper is far from the first to identify the risk which is now well-known.

However the BESS industry as a whole has still not agreed or implemented adequate Engineering standards to address basic Prevention measures to pre-empt thermal runaway accidents. Until it does, mitigation of major accidents by the Fire Services will remain the sole recourse for public protection and safety.

Submission ID: S39A75794

I am waiting for a FOI request from both Lincs and Notts Fire Safety Department. I will forward their replies when I receive them.
I am appalled that fire services are not seen as statutory interested parties for these projects.

Submission ID: S50FB0C2A

Further submissions have or will be made by members of Fields for Farming Community Group