

Written Response to ExA Questions on West Burton Solar Project

ExA Questions 1.6.9., 1.6.10 and 1.6.11 EMF, Deadline 3, West Burton Solar Project.

I refer to my previous WR on the Impact of EMF on Marine Life, Flora and Fauna, and Biodiversity in the West Burton Solar Project and would further add the following representations.

The developer has chosen to comment on human life and has not made any consideration of the significant impact of EMF on marine life, flora and fauna with wildlife, and biodiversity, where all the later are intrinsically linked to each other.

A myriad of cable runs in the project resulting in connections carrying up to 400Kv to transport electricity from the solar panels to the National Grid using transformers, inverters etc., all of which transmit EMF's.

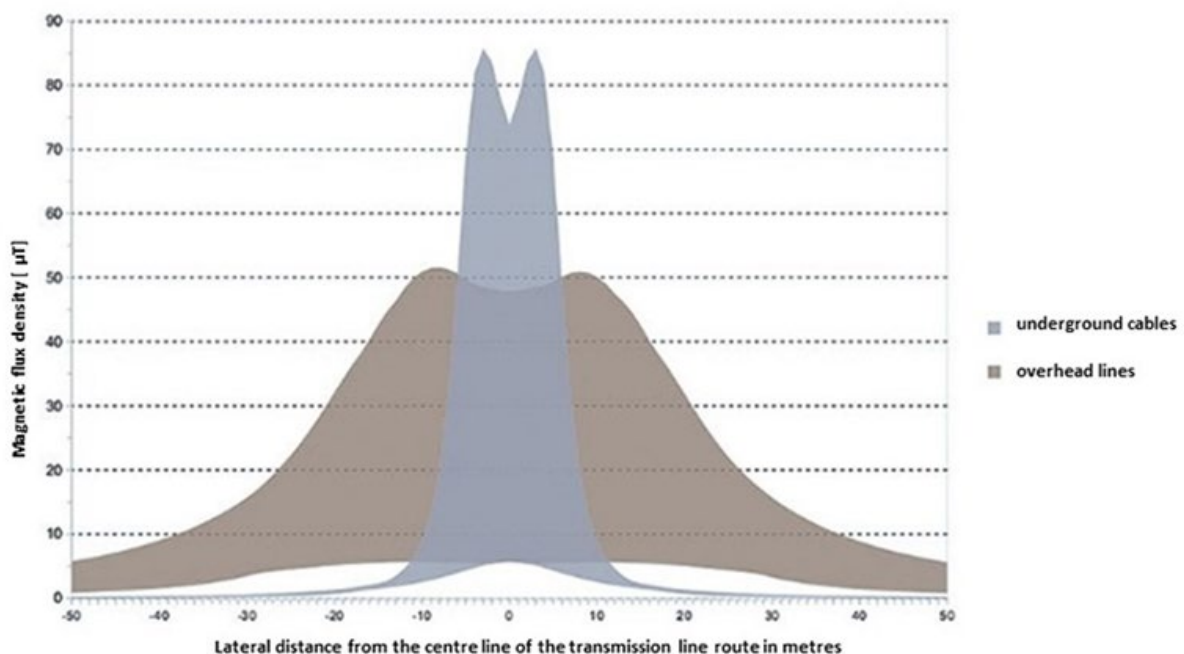
The WR shows that the magnetic fields created on the development site will be significantly stronger, and the effect of EMF will be distanced further away by at least 7 metres.

A magnetic field measuring 57.5 milligauss immediately beside a 230 kilovolt transmission line measures just 7.1 milligauss at 100 feet, and 1.8 milligauss at 200 feet, according to the World Health Organization in 2010.

An Electromagnetic Field is a circular vector field that radiates out centrally from its stronger central core with a magnetic influence on moving electric charges, electric currents, and magnetic materials.

The electromagnetic fields will not be mitigated or stopped by covering over or burying. in effect the EMF will at its core be distanced 2.9 metres and have an effective band width across the River Trent calculated at 12 metres.

The diagram below shows the effect of EMF field strength set against underground and overhead cables and lateral core and illustrates the maximum values expected at the examined route sections during maximum operating conditions of a typical 400kV power line.



The effect of EMF will be significantly impacted by any additional power line cable crossings of the River Trent and other watercourses.

The Impact of EMF on Marine Life, Flora and Fauna and BioDiversity are well researched, documented and detailed in the WR's submitted previously.

The Water Framework Directive, the IUCN Red List, the OSPAR, the European Eel Regulations (100/2007), the Eels(England and Wales) Regulations, the Canal Rivers Trust and the Notts Biological & Geological Records Centre list threatened, endangered and protected marine species including the Allis Shad, Brook Lamprey, Bullhead, Common / European Sturgeon, Crucian Carp, Eel, River Lamprey, Sea Lamprey, Smelt, Spined Loach, Twaite Shad, White Clawed Crayfish, Brown Trout and the Atlantic Salmon all found in the Rivers Trent and Till.

Many species of flora and fauna, because of unique physiologies and habitats, are sensitive to exogenous EMF in ways that surpass human reactivity, are highly variable, largely unseen, and a possible contributing factor in species extinctions.

EMF has an adverse effect on orientation, migration, food finding, reproduction, mating, nest and den building, territorial maintenance, defence, vitality, longevity and survivorship itself. Wildlife loss is often unseen and undocumented until tipping points are reached.

So how do you mitigate and provide protection to the environment?

By using overhead cable lines for water crossings and other buried large power lines on site.

Is the Developer, Examiner and the Secretary of State satisfied that there is no risk to any protected species from the effect of EMF and its features because of this and other similar Project?

2. Written Response to ExA Questions on West Burton Solar Project

ExA Questions 1.12.7 BESS, Deadline 3, West Burton Solar Project.

COMAH

There are growing concerns about the use of Lithium-ion batteries in large scale applications, especially as Battery Energy Storage Systems (BESS) linked to renewable energy projects and grid energy storage. These concerns arise from the simple consideration that large quantities of energy are being stored, which if released uncontrollably in fault situations could cause major damage to health, life, property and the environment.

BESS are not currently regarded by HSE as regulated under the COMAH.

The reason the COMAH regulations should apply is the scale of evolution of toxic or inflammable gases that will arise in BESS "fires".

Applicability of the COMAH (Control of Major Accident Hazard) Regulations 2015

The governing criteria for application of the COMAH Regulations [17] are:

1. The presence of hazardous materials, or their generation, "if control of the process is lost."
2. The quantity of such hazardous materials present or that could be potentially generated.

The COMAH regulations (2015): COMAH regulates establishments with quantities of dangerous substances (categorised as toxic, flammable or environmentally damaging) that are present above defined thresholds. The substances do not need to be present in normal operation. If dangerous substances could be generated "if control of the process is lost", the likely quantity generated thereby must be considered. If the mass of dangerous substances that could be generated in loss of control exceeds the COMAH thresholds, the Regulations apply.

There is no doubt that hazardous substances such Hydrogen Fluoride (an Acute Toxic controlled by COMAH) would be generated in a BESS accident (i.e., in "battery fires"). Similarly highly Inflammable Gases (also controlled by COMAH) would be evolved even if the atmosphere remained oxygen-free. Depending on the size of the "establishment" these could be produced in sufficient quantities to be in the scope of COMAH.

Application to grid-scale BESS:

The Regulations refer to “a dangerous substance which it is reasonable to foresee may be generated during loss of control of the processes”. Both Flammable Gases (P2) and Acute Toxicity (H1 and H2) are certainly “reasonable to foresee” in thermal runaway incidents which are now well-documented.

The evolution of regulated, named and categorised hazardous substances from Li-ion battery cells in thermal runaway is also well-documented. A “worst credible accident” would have to consider that the entire inventory of Li-ion cells would be destroyed in a single BESS cabin at least. Cabin-to-cabin propagation should also be considered.

The Regulations apply to the entire “establishment”, controlled by a single operator. Whilst the individual BESS compounds at Sunnica might be regarded as separate establishments, it is less reasonable that individual BESS cabins should be regarded as separate “establishments”.

They are separate “installations” but “establishment” means the entire area under control of an “operator”. Only if the most stringent safeguards were in place to ensure that the disastrous consequences of cabin-to-cabin propagation of “battery fires” could not conceivably occur, could it be argued that dangerous substances, exceeding the COMAH thresholds in quantity, were not “reasonable to foresee being generated during loss of control of the process”.

It is believed the COMAH regulations apply to BESS and that the approach of HSE is wrong and will the ExA recognise the importance of the responses from the HSE.

Roy Clegg