

From: [NectonSubstationAction Messenger](#)
To: [Norfolk Boreas](#)
Subject: Norfolk Boreas Project – EN010087 - Late application for Deadline 1
Date: 29 November 2019 09:31:22

Dear Planning Inspectorate

Please could we request that this is published for DEADLINE 1, as it contains a response/questions to the applicant's answers to questions posed at the OFH?

The developer has answered Necton's Parish Council's concerns regarding terrorist attack and fire risk in our area caused by their substations by attempting to reassure them with general comments. They have not reassured us.

Terrorist Attacks:

According to a report by the Electric Power Research Institute (EPRI), which conducts research on issues related to the electric power industry in the US, from 1996 – 2006 there were approximately 2500 attacks from terrorist groups against transmission lines and towers in various parts of the world and 500 attacks on substations.

Just because these attacks have occurred in the USA and other parts of the world it does not mean there will never be any in the UK. In fact placing 70 acres of substations in a small area surrounded by communities, means terrorists could be more attracted here than ever before. The bigger these industrial installations get, the more likely it is that the UK will experience attacks in the near future, especially with the advent of drones which have already caused national disruption to air travel.

Fire Risk

Substations are inherently extremely dangerous places.

It would seem inappropriate in the extreme to literally squeeze the biggest offshore, onshore substation in the world into the bounds of several communities, surrounded also by the very real risk of fire from the surrounding agricultural fields.

Vattenfall were steered towards Necton by being offered the connection point by National Grid. When the NG were asked if they gave any consideration to what surrounded the area, or how the project might fit in, National Grid's answer was that they do not. Not any consideration at all. This was down, they said, to the applicant.

Dangerous and Volatile Substances

Dielectric fluid, a mineral oil, is used to cool and insulate underground transmission feeders. This nonpolychlorinated biphenyl (PCB) oil resembles cooking oil and has a flash point of 350°F and an autoignition temperature of 795°F. *Note that electrical arcs can produce temperatures up to 7,000°F to 10,000°F and can easily ignite oils.*

Transformer oil is the generic name given to the oil used to insulate and cool transformers. Its flash point is approximately 300°F. Historically, this is where PCBs have been found.

Edisol XT is a viscous insulating oil used in capacitor banks. It is nonPCB oil and has a flash point of 284°F. Material safety data sheet (MSDS) information indicates that dermal exposure results in skin irritation, consistent with most petroleum exposures. *Note that older capacitor cans may contain PCBs.*

Sulfuric acid is contained in the lead/acid batteries used in the backup power source for the facility. Substations typically have two battery rooms, each containing 30 to 40 car-type batteries. Each battery holds five to 10 gallons of acid with a 30- to 40-percent concentration. Exposure to sulfuric acid under normal conditions presents a dermal hazard, but more significant issues arise when the product is exposed to heat. Sulfuric acid mist can produce serious, if not fatal, injuries to responders who fail to protect against respiratory exposure.

Sulfur hexafluoride gas is used to insulate and extinguish arcs in circuit breakers and other electrical components. Under normal conditions, it is an odorless and colorless gas that is five times heavier than air and presents an asphyxiation hazard in below-grade confined spaces. If exposed to high heat, thermal decomposition of the product produces two hazardous by-products, hydrogen fluoride gas and metal fluorides.

Hydrogen fluoride gas (HF) gives off a rotten egg smell and is a desensitizer. Continued exposure to it may make it seem as if it has dissipated. It is also a respiratory hazard that when mixed with water, say, in your lungs, produces hydrofluoric acid.

Metal fluoride, a white talcum powder-like substance, is a dermal hazard, and exposure to it produces a sunburn-type effect on the skin. In addition, the ions in fluoride are calcium scavengers; they will eat through the skin and aggressively attack the bones. It also leaches calcium from your system and can trigger a heart attack. The key to successful treatment is early recognition of the symptoms of exposure and obtaining medical attention in a timely manner. MSDS information recommends flushing with copious amounts of water and using calcium gluconate, a gel that impedes the effects of the process.

Because of the hazardous environment found in substations, firefighters must resist their natural tendency toward aggressive tactics. These incidents require specialised knowledge, close control of operating personnel, and a heightened sense of caution. The first responding officers must closely supervise their firefighters to ensure their safety. All firefighters operating at the scene must be aware of the potential dangers and act to safeguard themselves from those dangers. When you respond to incidents at these sites, your utility should provide you with a representative with the specialized knowledge that will enable you to safely operate at a substation incident.

Would the applicant like to inform us which of these terribly dangerous elements will be used in Boreas?

What will be the procedure if any substances leak? How will residents be protected?

Would any of the applicants live close to their own substation? If not, why not?

How will the applicant stop windblown fire risk to residents, as there will be residents on each and every side, so no matter which direction the wind is in fire can rapidly spread. If a choice is available, what will be the priority, saving the substation and maybe preventing further spread, or saving residents?

How will they protect residents from smoke borne pollutants?

Substations catch fire regularly.

Where there are high concentrations of energy, heightened risks are inevitable. Malfunctions in substations can occur for a number of reasons, such as power surge, component failure, thunderstorms, damage caused by a rodent, or malicious attack. Any kind of damage or fault inside a substation can lead to sparks or an increase in temperature that

can easily ignite a fire. And because of the high levels of energy, once fire takes hold in a substation, it has the potential to cause a huge amount of damage, even travelling along cables and causing secondary fires at nearby substations.

Neighbouring residential and commercial properties are under threat if the fire cannot be contained, and smoke can cause breathing difficulties across a wide area, especially for those with existing respiratory conditions.

Can the applicant assure us that Boreas will never catch fire, or that residents will never be out in danger either from fire or smoke inhalation?

Could the applicant tell us how they will they stop birds and other flying creatures, and of course drones, from entering?

These substation fires below are just a few of those in the **UK** in just 2018 – Please bear in mind most of these were in small substations, and nothing like the catastrophe that could happen if the biggest offshore wind, onshore substation in the world caught fire, especially when it is surrounded by communities.

January 2018

Several homes and businesses are without power in Aylesbury this lunchtime because of a fire at an electricity substation.

January 2018

A fire has torn through an electrical substation at the Ryeford Industrial estate in Stonehouse.

Feb 2018

Power has been restored to thousands of homes after a fire at an electrical substation that left a man in hospital. About 5,000 homes in Worcestershire were left without power on Friday due to the blaze in Worcester Road, Upton Warren, which started at 13:00 GMT. Power has since been restored to the homes, mostly in Upton Warren and Wychbold. It is not yet known what caused the blaze but fire chiefs are investigating. The injured man remains in hospital.

March 2018

An explosion which sent a stream of flames into the air in Saltburn, North Yorkshire left 22,000 homes without power.

March 2018

Fire engulfed a substation at Market Harborough. A spokeswoman for Western Power Distribution added: 'We still can't get near it, and from experience it can be quite difficult to tell what happened.'

June 2018

Firefighters were called to an electrical substation in Aberdeen after a blaze broke out.

July 2018

A section of Friar Street, Reading had to be cordoned off while emergency crews dealt with a fire in an electricity substation.

July 2018

The Brigade was called at 1957 and the fire was under control at 2123. Fire crews from Finchley, Barnet, Southgate and Mill Hill fire stations attended the scene. The cause of the fire was accidental and is believed to have been caused by an electrical fault within the substation.

October 2018

QUEEN Alexandra Hospital in Portsmouth said it briefly lost power this afternoon after a fire at a substation.

October 2018

Fire crews are at the scene of a fire at an electrical substation in North Devon.

Local residents in the village of Pyworthy near Holsworthy have been asked to keep their doors and windows closed following the incident.

December 2018

Substation fire in Braintree

December 2018

Fire at an electrical substation – Ashford Kent. Due to smoke residents were advised to keep doors and windows closed.

Due to all the points above we ask another question. We trust this will not be considered a vexatious one as it is intended to be very serious, and only requires a simple honest answer, which is extremely relevant to us. If offered two similar properties, one with a substation of the capacity of theirs close by, and one without, which one would the applicants buy and which one would they pay more for?

NSAG

These are the sources used.

<https://www.fireengineering.com/articles/print/volume-163/issue-11/features/electric-substations-hazards-and-response.html>

<https://incident-prevention.com/ip-articles/safety-awareness-for-substations>

<https://www.substation-safety.com/safety-practices-substations/>

http://www.energynetworks.org/assets/files/electricity/she/public_safety/leaflets/Substations_180811.pdf

https://www.powerwatch.org.uk/pdfs/sims_dent_urbanstudies_april_2005.pdf

<https://www.bbc.co.uk/news/uk-england-hereford-worcester-43016090>

<https://www.hwfire.org.uk/news/09-02-2018-multiple-crews-attended-fire-in-electrical-substation>

<https://allsaveduk.com/news/fire-risk-in-electricity-substations>

<https://www.portsmouth.co.uk/news/qa-hospital-suffers-brief-powercut-after-fire-at-substation-1-8673862>

https://www.youtube.com/watch?v=BDUI0-s5_N4

<http://www.bbc.co.uk/news/uk-scotland-south-scotland-42638900>

<http://www.bbc.co.uk/news/uk-england-derbyshire-15279267>

<https://www.getwestlondon.co.uk/news/west-london-news/harrow-fire-more-200-homes-14120929>

<https://www.avonfire.gov.uk/bristol-incidents/2114-electrical-substation-fire>

<http://www.bbc.co.uk/news/uk-england-leicestershire-39341030>

<https://www.powertransformernews.com/2017/06/02/10000-loose-power-after-fire-at-fareham-uk-substation/>

<https://www.dailystar.co.uk/news/latest-news/502933/Huge-fire-power-station-Grantham>

<http://www.eadt.co.uk/news/substation-fire-in-laxfield-1-4797248>
<http://www.mirror.co.uk/news/uk-news/huge-fire-middle-cardiff-city-10690680>
<http://www.cornwalllive.com/news/marazion-substation-fire-still-burning-638043>
<https://news.sky.com/video/fire-25k-homes-without-power-11278413>
http://www.swindonadvertiser.co.uk/NEWS/15777915.Power_problems_blamed_on_Marlborough_Road_substation_fire/
<https://www.london-fire.gov.uk/incidents/2018/july/fire-at-electrical-substation-barnet/>
<http://www.kent-fire-uk.org/news/incidents/?entryid2=18795>
<https://www.bristolpost.co.uk/news/bristol-news/firefighters-called-after-little-stoke-1104303>
<https://www.devonlive.com/news/devon-news/live-updates-fire-crews-called-2092937>
<https://www.leicestermercury.co.uk/news/local-news/live-smoke-over-market-harborough-1375032>
<https://www.newsflare.com/topic/substation-fire>
<https://www.eveningexpress.co.uk/fp/news/local/fire-crews-called-to-substation-blaze/>
<https://www.stroudnewsandjournal.co.uk/news/15890899.power-cuts-as-blast-starts-fire-in-substation/>