Offshore Wind Farms

EAST ANGLIA ONE NORTH

PINS Ref: EN010077

and

EAST ANGLIA TWO

PINS Ref: EN010078

Post ISH 4 submission

HEALTH IMPACT ASSESSMENT of PROPOSED EA1N & EA2 CONSTRUCTION

Deadline 5 – 3 February 2021

By Prof. Hopayian

SEAS (Suffolk Energy Action Solutions)

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DEADLINE 5 SUBMISSION

Post ISH 4 submission

HEALTH IMPACT ASSESSMENT OF PROPOSED EA1N & EA2 CONSTRUCTION

Health Impact Assessment of Proposed Construction
East Anglia ONE North and East Anglia TWO Offshore Windfarms

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Background

I am an academic general medical practitioner.
I have been a GP for 36 years. During construction of the Sizewell B nuclear power plant, I worked as a GP at Leiston, Suffolk and acted as the medical officer supervising the medical centre on the construction site. I therefore have personal experience of the impact of a major construction project on a small population.
I am an Appointed Doctor to the Health and Safety Executive under the Ionising Radiation Regulations and have relevant experience in assessing environmental influences on health.
I am currently Professor of Family Medicine with a special interest evidence-based medicine directing an online MSc in based at the University of Nicosia, Cyprus.

1. Health effects of a major construction project

1.1. It is my intention to assess the effects on the health of the local population. The health effects can be categorised as

1.2. Direct such as the effect of air pollutants. These may be
- o short term or acute, during the period of exposure,
- o long term or chronic, continuing after the exposure

1.3. Indirect, arising from changes in the social as well as physical environment

1.4. Effects on the health service

2. Direct Health Effects

2.1. The presence of pollutants are the most easily recognisable hazard. They have been given the most attention by SPR and by responses to the consultation. Assessing the health effects requires data from several sources:

- o The known effects of the pollutants
- o The quantitative relation between concentration of pollutants and health outcomes
- o The predicted change in the concentration of pollutants

2.2. The effects are not uniform across the whole population, with some effects mostly falling on children while others mostly on the elderly.

3. The known effects and quantitative relation of pollutants to health outcomes

3.1. Table 1 shows the known effects of pollutants created by road traffic and by excavation. Not all effects have been quantified.

Table 1 Health effects of pollutants (1)

Pollutant	Acute Effect	Chronic effect	Emerging evidence
PM2.5	Acute coronary Strokes Arrhythmias (irregular heart rhythm) Exacerbation asthma Chronic Obstructive Pulmonary (lung) Disease	Onset within 6 months: Chiefly heart diseases and strokes Lung cancer Increased overall mortality	Parkinson's disease and Alzheimer's, Developmental delay in children Low birth weight Diabetes
NO_2 especially at high exposures	Respiratory infections in childhood	Impaired lung development in childhood Reduced lung function in adults Increased overall mortality	
O_3	Increased mortality		

3.2. Table 2 shows the effects of several that have been quantified in terms of the increase in risk for each incremental change in exposure.

Table 2 Quantified effects of pollutants on health (2)

Pollutant	Condition	Hazard Ratio for every 10 µg/m^3 increase
$PM_{2.5}$, annual mean	Mortality, all-cause (natural), age 30+ years	1.062
$PM_{2.5}$, daily mean	Hospital admissions, respiratory diseases, all ages	1.019
PM_{10}, annual mean	Postneonatal (age 1–12 months) infant mortality,	1.04
PM_{10}, annual mean	Prevalence of bronchitis in children, age over 6 years	1.08
PM_{10}, annual mean	Incidence of chronic bronchitis in adults	1.117

3.3. The hazard ratio (HR) is the ratio of the risk of developing a condition as a result of exposure to the risk without the exposure. To illustrate how to interpret it, let us take the last condition, incidence of chronic bronchitis in adults. The HR of 1.117 means that for every 10 µg/m3 increase in PM10 w there will be a 10% increase in chronic bronchitis. To apply that to the local circumstances, we need to relate the HR to the predicted increase in concentrations of pollutants.

4. The predicted increase in the concentration of pollutants

4.1. SPR has commissioned an air quality assessment (3). Having modelled changes in concentrations of dust, nitrous oxides and particulate matter at several sites, the conclusion was that the exposures will not be significant. There are three lines of reasoning to consider why this conclusion is unjustified: potential underestimation of the changes, failure to consider differential impact, and failure to consider cumulative effects over time.

4.2. Potential underestimation. A separate assessment (4) commissioned by SEAS has

commented that these may be underestimates because

o NH3 emissions from road vehicles and NRMM;

o Additional proposals in relation to the cumulative and In-Combination Assessments;

o The potential for horizontal exhausts on generators; and,

o The potential for emissions not reducing in accordance with current forecasts.

4.3. Differential impact. Pollution does not affect all groups equally. The proportion of people over the age of 60 is 44%, higher than the average for England(5). Therefore the HRs for all cause mortality, hospital admissions and chronic bronchitis in the local population would to be higher than those in table 2.

4.4. Children attending Coldfair Green and Snape schools are another group differentially affected. The B1069 on the approach to the B1353 will be a hotspot for traffic exposing a concentrated gathering of children. The problem will be magnified by the temporal concentration of car emissions from employees' private cars going to and from work at the time that children are arriving and leaving school. One hundred and thirty children at Coldfair Green and 70 at Snape will be affected.

4.5. Cumulative effect. The HRs in table 2 relate to annual risk increases. The projects will run for 12-15 years so the effects on chronic diseases will be accumulative. This is of concern for all groups but especially for children who will be at Coldfair Green school for much of the formative period of their lives when they are at risk from developing lung disease and neurodevelopmental delay.

4.6. The SPR submission has made its case on the grounds that the predicted concentrations of PM2.5 PM10 and NO2 will be below the proscribed limits. However, this case overlooks the fact that there are no accepted safe lower limits.

5. **Indirect health effects**

5.1. Indirect effects have so far not been considered. Plausible predictions have been made on the likely unemployment that will arise as a loss of tourism.

5.2. Unemployment can cause mental health problems (6) and physical problems including an increase in mortality (7). Such effects would continue after construction is completed.

6. **Effects on the health service**

During the construction of Sizewell B, there were periods of gridlock in Leiston town as workers attempted to drive home at the end of the working day. Such gridlocks occurring on the smaller roads in the area are likely to pose an obstacle to home visiting by primary care practitioners and an obstacle to emergency vehicles.

7. Summary

- o The changes in concentration of air pollutants cannot be considered insignificant
- o The long term exposure of pollutants needs to be taken into account when direct impact on health is assessed
- o Exposure will have both acute and chronic effects, the latter continuing after completion of the construction
- o There will be differential impact on groups: children and older adults will be affected more
- o There are likely to be indirect effects on health and on the health service.

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