TOWN AND COUNTRY PLANNING ACT 1990 (AS AMENDED)

APPEAL BY T A Fisher & Sons Ltd

Against the refusal of Full Planning Permission

by

West Berkshire Council

ON

LAND TO THE REAR OF THE HOLLIES, READING ROAD, BURGHFIELD COMMON

For

The erection of 32 dwellings including affordable housing, parking and landscaping. Access via Regis Manor Road.

Application Reference no. 22/00244/FULEXT
Appeal Reference no. APP/W0340/W/22/3312261

Rebuttal

by Dr Michael Charles Thorne BSc PhD FInstP FSRP CRadP

in respect of Proofs of evidence by ONR

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1. Scope of Rebuttal

1. My name is Michael Charles Thorne. My qualifications include a BSc (Hons) degree and a PhD in physics. I am a Fellow of the Institute of Physics, an Honorary Fellow of the Society for Radiological Protection and a Chartered Radiation Protection Professional. I am also Editor-in-Chief of the Journal of Radiological Protection.

2. I have approximately 48 years of experience in operational and environmental radiological protection. For the last 15 years, I have advised SKB, Sweden on site characterisation activities relating to geological disposal of radioactive wastes. I also provide advice on radioactive waste disposal to organisations in the UK, Finland, France, Spain and the United States. In addition, I have extensive experience in the remediation of former uranium mining and milling sites, having led or participated in projects in Bulgaria, Slovakia, Albania and Romania. In the non-nuclear field, I have provided advice to the Channel Tunnel Safety Authority and on the safety of developments near chemically hazardous installations. I have also appeared as an expert witness in various public inquiries, hearings and civil trials in the UK and the USA and was a member of the WHO expert group that evaluated US liabilities for compensation in relation to residents of the Rongelap Atoll in the Marshall Islands. I have published several books (comprising six volumes on radionuclides in the environment and two volumes on the pharmacodynamics of toxic metals, semi-metals, organic compounds and asbestos) and book chapters, as well as around 100 peer-reviewed journal articles, mainly on the environmental transport of radioactivity.

3. I have reviewed the evidence provided by Dr Keith Pearce to this Inquiry (in particular his main proof of evidence and a final draft of his rebuttal proof) together with the Proofs of Evidence from representatives of the Office for Nuclear Regulation, AWE and West Berkshire District Council. Based on my review, I agree with the assessment and conclusions set out by Dr Pearce in his evidence.

4. My Rebuttal relates solely to the statement at Paragraph 21 of the Proof of Evidence on Emergency Preparedness and Response by Grant Ingram that '*it could take many days to understand the situation and provide reassurance to residents, particularly because the species of radioactive material which would be involved would be particularly challenging to monitor.*' He further suggests that '*It is reasonable for the OSEP to consider the need to relocate residents while this complex work is undertaken*.'

2. Requirements for Monitoring, Decontamination and Long-term Relocation

5. I agree that both plutonium and highly enriched uranium are difficult to monitor. They are both primarily alpha-emitting radionuclides. Although they emit small amounts of x-rays and gamma rays, the yields per transformation and energies of emission are both low (e.g. 2.09% yield at 17.06 keV for the main x-ray emission from Pu-239). If the need is to detect low concentrations in environmental materials, it is usual to collect samples, dissolve them, separate the plutonium or uranium from them, plate it out to make a thin source and then determine the activity using alpha spectroscopy. Because alpha spectroscopy has good energy resolution, this approach means that specific isotopes can be identified ensuring that a distinction can be made between contamination resulting from an accident and alpha-emitters, such as U-238, that are naturally present in the environment.

6. However, whereas the analysis of samples by alpha spectroscopy is complex, this analysis is usually undertaken in a laboratory environment remote from the site of sampling. I would expect such facilities to be available on both the AWE sites at Burghfield and Aldermaston. At the sampling site, activities are largely non-intrusive, comprising removal of samples of environmental media (e.g. soil) or wipe tests on impervious surfaces (e.g. glass or polished stonework). Therefore, the only disruption to residents would be in granting access for sample taking at those few locations selected for sampling. The proposed development would not increase the number of samples required because the aim would not be to provide a detailed map of contamination.

7. Because of the complexity of alpha spectrometric assays, sample throughput is likely to be limited and timescales for obtaining results from individual samples could be about 24 hours. Therefore, monitoring should be considered as complementary to mathematical modelling of the dispersion and deposition of radionuclides released in an accident. This can be done using the Met. Office NAME model (https://www.metoffice.gov.uk/research/approach/modelling-systems/dispersion-model).

8. The NAME model can be used either with forecast or archived meteorological data. In this context, it would be used with retrospective time-course estimates of the release and archived meteorological data to provide estimates of the spatial pattern of deposition resulting from the accident. These results would provide a basis for focusing actual monitoring. In my view, this monitoring should be directed to confirming and refining the

dispersion calculations, rather than attempting to provide a detailed map of the spatial pattern of contamination. Thus, there is a need to prioritise the throughput of a limited number of samples from sites selected to optimally inform refinement of the dispersion calculations – but as above this is achievable within 24 hours and can/should be part of advance emergency planning.

9. For the magnitudes of accidents considered in relation to AWE(B), contamination levels in the environment are projected to be very low. Therefore, for areas in the outer part of the DEPZ and for all distances within the DEPZ upwind of the accidental release, the outcome of such monitoring should be that levels of contamination are either very low or undetectable. Therefore, the main role of such monitoring is to exclude areas from further investigation or decontamination, so focusing resources on those areas where radioactive contamination is of radiological significance.

10. In summary, in the area around the proposed development, requirements for monitoring should be limited to the taking of a small number of environmental samples. The need for such sampling would be determined by the distribution of contamination in the environment as calculated by atmospheric dispersion modelling. It is likely that results from the dispersion modelling and limited monitoring would mean that no further monitoring would be required. At the location of the proposed development, it is projected that dose rates that would arise after the passage of the initial plume would be so low that decontamination of the environment would not be required. Thus, disruption of residents of the development in the period following the initial phase of an accident at AWE Burghfield should be minimal.