APP/L2250/V/10/2131934 & APP/L2250/V/10/2131936

SECTION 77 TOWN AND COUNTRY PLANNING ACT 1990 – REFERENCE OF APPLICATIONS TO THE SECRETARY OF STATE FOR COMMUNITIES AND LOCAL GOVERNMENT

TOWN AND COUNTRY PLANNING (INQUIRIES PROCEDURE) (ENGLAND) RULES 2000

APPENDICES TO THE REBUTTAL PROOF OF EVIDENCE OF DAVID NICHOLLS BSc

NUCLEAR SAFETY

21st April 2011

In respect of:

Planning Application Reference:	Y06/1647/SH (New Terminal Building)
Planning Application Reference:	Y06/1648/SH (Runway Extension)

relating to land at London Ashford Airport, Lydd, Romney Marsh, Kent, TN29 9QL

LYDD
London Ashford Airport

APPENDIX A: NUCLEAR SAFETY MANAGEMENT AND THE TOLERABILITY OF RISK

A1. This Appendix provides a summary of how nuclear safety, and aircraft crash risk in particular, are managed in the UK and how a judgment can be made as to what is 'safe enough'. The following paragraphs outline:

- the duties of the power station operator and airport with regard to safety
- the roles and remits of the safety regulators
- the ALARP principle
- how I have derived a tolerability criterion for aircraft crash.

Duties of the power station operator and airport

A2. The primary legislation relevant to the safety risks of interest at this Inquiry is the Health and Safety at Work etc Act 1974. Under this Act, employers (such as the operators of airports, or nuclear power stations) have, *inter alia,* a duty to reduce risks to their workforce, and others who may be affected by their activities, so far as is reasonably practicable (SFAIRP).

A3. The 'employers' (also referred to in health and safety regulation as 'duty holders') most relevant to this Inquiry are:

- British Energy, which operates Dungeness 'B' power station. It is responsible for all aspects of its safety, including the risk from external hazards such as aircraft crash.
- London Ashford Airport Ltd, which operates the airport
- The various aircraft operators which use the airport.

Roles and remits of the regulators

A4. The principal safety regulator for nuclear power stations is the Nuclear Installations Inspectorate (NII) within the Health and Safety Executive (HSE)[1].

[1] The NII is currently in the process of becoming part of the Office for Nuclear Regulation (ONR), which will bring together the safety and security functions of the NII, the Office for Civil Nuclear Security (OCNS) and the UK Safeguards Office and the Department for Transport's Radioactive Materials Transport Division.

A5. The principal safety regulator for airside facilities and operations at the airport, and for aircraft, is the Civil Aviation Authority (CAA).

A6. The roles of these regulators include promoting good practice through information and guidance, and inspecting and auditing the regulated facilities and operations. They can also, ultimately, take enforcing action.

A7. The Dungeness power stations, and the airport, are licensed facilities. That is, they can only operate subject to the grant of a licence from their respective safety regulators (NII and CAA), and in accordance with the terms of that licence.

The ALARP principle

A8. The duty to reduce risks SFAIRP within the Health and Safety at Work etc Act 1974 is in practice synonymous with the more commonly-referred requirement to reduce risks to a level that is as low as reasonably practicable (ALARP).

A9. In the HSE framework for assessing the tolerability of risk [10], the 'ALARP region' refers to the range of risk levels that is below any 'intolerable' limit. If risks are above the intolerable limit, action must be taken to reduce them, irrespective of cost.

A10. Within the ALARP region, it is appropriate to weigh safety against cost. A risk is tolerable when it can be shown (a) that the cost of further measures to reduce risk would be grossly disproportionate to their safety benefit and (b) that relevant good practice has been followed.

A11. The HSE also defines 'broadly acceptable' levels of risk, below which it will not usually apply further regulatory pressure to reduce risks further. The NII screening level of 10^{-7} per year defines, in effect, this 'broadly acceptable' level for aircraft crash. For duty holders, however, the requirement to reduce risk does not stop at this point; risk must still be reduced wherever there are reasonably practicable opportunities to do so.

Deriving a tolerability criterion for aircraft crash

A12. In the absence of further information from British Energy or the NII regarding the safety case for Dungeness B, it has not been possible, either in the earlier assessment [1] or in this rebuttal, to define a tolerability criterion that explicitly takes account of both the frequency of aircraft crash and its radiological consequences for the surrounding population. We do not have access to sufficient information about the power station structure, operation and safety systems to evaluate the radiological consequences of a crash. It is however possible to derive an equivalent criterion based on crash frequency alone from the concept of the 'design basis criterion'.

A13. The design basis criterion for a given hazard is a threshold on the frequency of occurrence of that hazard. It is widely used in nuclear safety cases to determine whether or not the facility needs to be designed to withstand that hazard (see para 497 of the NII SAPs [5]). If the expected frequency exceeds the design basis, the NII would expect the facility to be designed to withstand that hazard, without unacceptable consequences.

A14. It is unlikely that the Dungeness power stations would have been designed to withstand aircraft crash. Thus, if an aircraft crash occurs, the consequences could, by the definition of the design basis, be unacceptable. The design basis frequency criterion therefore represents, in effect, the upper limit of the ALARP region – the boundary between the ALARP region and intolerable risk.

A15. For external hazards, such as aircraft crash, the Technical Assessment Guide on external hazards [4] that accompanies the NII SAPs [5] suggests a design basis criterion of 1 in 10,000 per year (10^{-4} per year).

A16. In the original assessment [1] and this rebuttal, I have adopted a more stringent criterion of 1 in 100,000 per year (10^{-5} per year). This follows practice in other nuclear facility safety cases, where a distinction is made between natural hazards (such as flooding) and man-made ones (such as aircraft cash), with a more stringent criterion being imposed for the latter. This frequency of 10^{-5} per year is the same as the design basis criterion suggested in para 242 of the SAPs for initiating events due to equipment failures or human errors within a nuclear facility.