

**TOWN AND COUNTRY PLANNING ACT 1990 - SECTION 77 AND TOWN AND  
COUNTRY PLANNING (INQUIRIES PROCEDURE) (ENGLAND) RULES 2000**

**APPLICATIONS BY LONDON ASHFORD AIRPORT LTD**

**SITE AT LONDON ASHFORD AIRPORT LIMITED, LYDD, ROMNEY MARSH,  
TN29 9QL**

## **SUMMARY PROOF OF EVIDENCE**

**TRUDY AUTY, BSc, ARCS**

**Assisted and Supported By:**

**Commodore Stephen Auty, BSc, ARCS, MInstP, ChPhys, FRMetS**

**Dr Malcolm White, BSc, ARCS, DIC, PhD, MInstP, ChPhys, FRSA**

**FOR LAAG**

**PLANNING INSPECTORATE REFERENCE: APP/L2250/V/10/2131934**

**LPA REFERENCES: Y06/1647/SH and Y06/1648/SH**

# NUCLEAR SAFETY CONFLICTS

## ASSOCIATED WITH THE PROPOSED EXPANSION OF LONDON ASHFORD AIRPORT

- 1) My name is Trudy Auty. I worked in industry for 25 years, managing multi-disciplinary teams<sup>1</sup> as well as judging the fit and applicability of mathematical models derived in the course of product development.

Assisted by:

- 2) Dr M.S. White, a consultant in the nuclear industry.
- 3) Commodore Auty, a previous Director of Naval Surveying, Oceanography and Meteorology who has managed flight deck operations, landing aircraft in difficult weather under combat conditions.
- 4) This perspective is derived from our experience in managing complex, technical, cross-departmental programs and understanding the physical limitations of the human-machine interface when stressed by chains of events in real time, operational scenarios.
- 5) We support nuclear power but object to the unnecessary, unquantifiable and uncontrollable increased risk of nuclear accident posed by these plans.
- 6) Our evidence shows that the Government Of The South East's (GOSE's) original submission to the Secretary of State expressed concern in the area of nuclear safety which was edited out from later revisions<sup>2</sup>.

The margin note from Planning Central Casework that “**Presumably in view of the NII<sup>3</sup> stance, GOSE are content that there is not an issue here?**” highlights a general perception that a) The NII is always right and b) that its position automatically takes priority. Yet the NII stresses this is untrue and its views must be weighed against those of other consultees.<sup>4</sup>

- 7) A runway extension at London Ashford Airport (LAA) would introduce large commercial aircraft taking off, landing and performing low level procedures close to the nuclear site. This creates a step change in the risk posed by LAA traffic because there would be a step change in the consequences in the event of a collision.

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<sup>1</sup> R&D, engineering, production, service, market development. Personal histories in LAAG 3/A para 6 to 22

<sup>2</sup> LAAG 3/A Para 141 to 146, and LAAG 3/B, Appendix 2. Obtained via an FOI request

<sup>3</sup> Nuclear Installations Inspectorate, (Nuclear Directorate)

<sup>4</sup> LAAG 3B, Appendix 1, letter 3, note 6

- 8) Given the intolerable outcome, one would need a high degree of confidence in the integrity<sup>5</sup> of any risk assessment before these plans could be approved and assurance that the airport system<sup>6</sup> had been considered in its entirety; taking a holistic view of the way in which specific hazards and operating conditions might interact.
- 9) Our evidence shows that the assessment is flawed, inadequate and that no such overview exists. Despite claiming to account for wider issues, the NII's stance is justified only on the numerical output of a highly approximated and untested mathematical model<sup>7</sup>
- 10) We show that the Byrne model is fundamentally flawed because:
- a) It is an over simplified, two dimensional plot attempting to describe a complex, four dimensional problem.
  - b) It just considers a paucity of historical crash data associated with other airports. It carries no information on the specific variables associated with this particular airport system. It has no mechanism to assess them singly or in combination.
  - c) It cannot account for integrated risk. HSE's guidelines state that NII must consider the 'full picture' and not a partial view from considering hazards in isolation<sup>8</sup>. This recognises that the combined risk presented by a number of problems occurring 'simultaneously' is greater than the sum of the parts. The model has no mechanism to interpret how a particular suite of conditions at a particular airport might interact.
  - d) Accidents happen when things go wrong. A risk assessment must focus on the possible ways in which an aircraft could deviate from its intended flight path and arrive at the nuclear site. The model has no facility to consider such scenarios. It assigns the same probability weighting to all aircraft movements, regardless of: their complexity, their tendency to carry the plane towards the Nuclear Power Plants (NPPs) and external hazards encountered en route.
  - e) The model has no mechanism to account for non-scheduled flight activity such as go-arounds which have potential to set up a chain of events that could culminate in a collision. It doesn't account for them either in number (CAA concedes that conditions at LAA are conducive to increased go around activity<sup>9</sup>) or in terms of any increased risk profile.
  - f) The birdstrike hazard has not been accounted for. The CAA confirms there is no mathematical model which represents birdstrike as it is different at every airport. De facto, it is not implicit within NII's model.

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<sup>5</sup> *Completeness, accuracy and certainty*

<sup>6</sup> *Airport, two firing ranges, a nuclear site and a major bird reserve*

<sup>7</sup> *Confirmed as the Byrne Model (LAAG3B, Appendix 1, Letter3, Note 3)*

<sup>8</sup> *LAAG/3A, Para 44 to 47*

<sup>9</sup> *LAAG/3B Letter 4*

- 11) In particular our evidence has shown that the NII's comparison of airfield crash rate with a notional background crash rate (one of its primary justifications for not objecting) is:
- a) Not justified by mandate or assessment criteria.
  - b) Not meaningful as this notional background density of air crashes is derived from just a handful of discrete data points.
  - c) Flawed because it only considers terrorism in the background case i.e. not an apples-for-apples comparison
  - d) Flawed in a way that would tend to underestimate the airfield to background crash ratio due to inappropriate screening criteria.

*(LAAG 3A, paras 48 to 54)*

- 12) Our evidence also highlights incorrect assumptions, including a misperception that large aircraft would be free to land according to the prevailing wind<sup>10</sup>. It shows problems with implementation including NII's failure to reconsider the allowable frequency in light of intolerable consequences.<sup>11</sup>
- 13) This is not an exhaustive evaluation of the model. However, just scratching the surface reveals inconsistencies and factors which have not been thought through in terms of its ability to describe this case.
- 14) NII's comments suggest that it does not appreciate the realities of an emergency situation, having a tendency to give the benefit of the doubt to attaining a positive outcome<sup>12</sup>. This is contrary to its requirement to err on the side of caution where public safety is concerned.
- 15) There is a failure to recognise that, whilst the pilot might have a some minutes to take action at the start of a chain of events, if it culminates in a bird strike over the reserve then he/she may have only a handful of seconds left before the aircraft crashes onto the nuclear site.
- 16) This illustrates a tendency to overlook the fourth dimension of time. The closer an incident gets to the NPPs, the less chance there is of implementing avoidance measures.
- 17) This is why, for bird control to be relevant to NPP protection, it would need to be applied along the trajectory of any aircraft which is heading towards the nuclear site. In particular it must include the bird reserve and designated areas which lie close to the nuclear complex, as culmination of an error chain at this point increases the probability of unavoidable collision<sup>13</sup>.

<sup>10</sup> LAAG3B, Appendix 1, letter 3, note 5

<sup>11</sup> LAAG 3A, para 38 to 40

<sup>12</sup> LAAG 3A, paras 72 to 75

<sup>13</sup> Might not be considered such an issue if LAA continues to operate primarily light aircraft, but clearly these measures would be necessary if the plans are approved, introducing large commercial aircraft to the vicinity.

- 18) LAA identified seven bird species which it claims present an unacceptable birdstrike risk, four of which are waterfowl. It admits that such species can only be discouraged by passive means such as netting and recommends this be applied to the airfield. Our evidence shows that failure to take equivalent action on the bird reserve and designated areas would be:
- a) Be contrary to CAA's CAP772/ICAO Annex 14 birdstrike regulations which state the need to **eliminate existing** bird attractants for distances up to 13km from the airfield unless an 'appropriate aeronautical study' shows they would not constitute a birdstrike hazard.<sup>14</sup>
  - b) Mean the government had failed to take mitigating action against an identified hazard which serves to escalate the probability of a nuclear accident.<sup>15</sup>
- 19) However, netting over ponds or generally discouraging waterfowl from these areas would conflict with the European Habitats Regulations.
- 20) A comprehensive risk assessment requires a multidisciplinary approach with relevant mathematicians, ornithologists, meteorologists, nuclear and aviation specialists considering the case in an appropriate forum. This appears not to exist and we see no evidence of an informed overview having been taken.
- 21) Instead, we see government departments acting independently giving scope for nuclear safety to fall down a gap in the middle. We give examples showing: the NII is not automatically alerted to flight path changes that could affect nuclear safety<sup>16</sup>; how lack of appropriate communications led to incorrect assumptions in the risk assessment<sup>17</sup> and how a difference in terminology led to the most relevant flight manoeuvres being omitted<sup>18</sup>.
- 22) Moreover our investigations show a reluctance of the relevant departments to engage in meaningful debate<sup>19</sup>, confusing accountability with their collective responsibility to assure public safety.
- 23) This lack of overview leaves the planning process vulnerable with the potential for nuclear safety to be compromised; particularly if councillors choose to overrule their own independent experts and take decisions without comprehending the interdependencies involved<sup>20</sup>.
- 24) In our view there has been over reliance on a highly approximated, flawed and untested mathematical model in assessing this case with a tendency to give the benefit of the doubt to a human's ability to manage a chain of events under emergency conditions.

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<sup>14</sup> LAAG 3A, Section 4

<sup>15</sup> LAAG 3A, Section 3

<sup>16</sup> LAAG 3A, para 119 to 121

<sup>17</sup> LAAG 3A, para 127

<sup>18</sup> LAAG 3A, para 122, 123

<sup>19</sup> LAAG 3A, para 124 to 129

<sup>20</sup> LAAG 3A, paras 130 to 134

25) A failure to:

- a) Stand back from the equations and consider whether their output makes common sense.
- b) Recognise the management burden that would be created if these plans are approved, given the ongoing need to monitor new flight paths and ornithological changes which could further compromise nuclear safety as years go by.

26) The fundamental driver behind all of these problems is the airport's close proximity to the nuclear power station. The simplest, most robust and least bureaucratic solution would be to implement a minimum separation policy.

27) In the meantime our evidence shows that there are too many flaws, deficiencies and conflicts in this assessment to allow the development to proceed. The nuclear industry has a requirement to err on the side of caution where there is uncertainty and where the safety of the general public is concerned. On this basis these plans should be refused.

**Trudy Auty**