TOWN AND COUNTRY PLANNING ACT 1990

A PLANNING APPLICATION BY CALA HOMES (SOUTH) LTD FOR THE REDEVELOPMENT OF LAND FOR MIXED USE, INCLUDING RESIDENTIAL, ON ALDERMASTON ROAD, TADLEY, ADJACENT TO THE ATOMIC WEAPONS ESTABLISHMENT AT ALDERMASTON

PROOF OF EVIDENCE OF
DR DEREK LACEY
ON BEHALF OF
THE HEALTH AND SAFETY EXECUTIVE

Basingstoke and Deane Borough Council
Planning Application Ref: BDB 67609

Planning Inspectorate Ref: APP/H1705/V/10/2124548

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1 Introduction

1.1 I am Dr Derek Lacey, Chartered Engineer, and I make this statement on behalf of the Health and Safety Executive (HSE). I am Deputy Chief Inspector and Head of Nuclear Directorate's Division 3 which is responsible for Defence Nuclear Facility Regulation and a range of corporate Nuclear Directorate functions including Emergency Preparedness and Land Use Planning. This is a Senior Civil Service position.

1.2 I am responsible, with my team for administering the Government's nuclear siting policies, which are currently vested in the Department of Energy and Climate Change (DECC).

2. Qualifications and Experience

2.1 I have worked in the civil service for 19 years, mainly on nuclear regulation and policy. I have held my current post for 6 months. In my previous post in DECC I was part of the senior civil service management team responsible for Government policy on siting and land use planning and for emergency preparedness. I hold a Ministerial appointment as a Government Technical Advisor for nuclear emergencies.

3 ROLE OF THE HEALTH AND SAFETY EXECUTIVE (HSE)

3.1 The HSE is the national independent regulator which acts in the public interest to ensure that dutyholders reduce work-related death and serious injury across Great Britain's workplaces and accidents to the general public from industrial and commercial activities.

3.2 HSE has a statutory duty to provide policy advice to Ministers, including proposals for new health and safety legislation. HSE supports and often represents UK Government in international negotiations on health and safety controls. HSE uses a range of advisory committees, comprising independent experts and industry representatives, in formulating its policy initiatives, and in reviewing its proposals before implementation. HSE also has a statutory duty to give effect to health and safety legislation by its inspection and enforcement role across a wide range of work activities including high hazard industries.

3.3 The Nuclear Installations Inspectorate (NII) was formed in 1960 and became part of HSE in 1974. Its activities are now carried out through HSE's Nuclear Directorate whose primary role is to protect people and society from the hazards presented by the nuclear industry in the UK. An essential goal is to avoid major nuclear accidents and as such, we pay particular attention to and focus on the safe operation of installa-

tions on all licensed sites including the Atomic Weapons Establishment (AWE) at Aldermaston.

3.4 HSE's regulation of the nuclear industries, based on the above regulatory principles, is acknowledged internationally by the International Atomic Energy Agency (IAEA) which is the world's centre of co-operation in the international nuclear safety field. The Agency works with Member States and multiple partners worldwide to promote safe, secure and peaceful nuclear technologies. During the 2006 Mission the IAEA team recognised the UK nuclear safety regulatory system as mature, transparent with an advanced review process with highly trained, expert and experienced staff. It also identified the Nuclear Inspections Inspectorate to be internationally recognised for its contribution to safety regulation. Thirteen areas of good practice were identified in the 2006 report, the most of any other country reviewed up to that time. In the second mission in 2009, the IAEA found ND has made further 'significant progress' toward improving its effectiveness in regulating existing nuclear power plants and in preparing to assess new nuclear reactors designs in a 'changing and challenging environment".

4 Summary of HSE's objection to the Boundary Hall Proposal

4.1 The Boundary Hall site is unsuitable for residential development:

a) on the public safety protection grounds that it would increase the number of people potentially placed in harms way at a site very proximate to a nuclear installation;

b) because it would compromise the effectiveness of the emergency authorities who have legal duties to plan and to respond to nuclear emergencies and who have correctly objected to the development and

c) because, for these and other reasons further residential development at the site would be a significant breach of government siting policy in which the key aim is to secure public safety by preserving population characteristics for the operating life of the installation;

4.2 The type and quantities of radioactive materials handled at AWE are such that in the event of their release in a radiation emergency there would be serious radiological consequences to people in the surrounding areas. In such an emergency people living and working closest to the AWE installation would receive the greatest harm. Of the radioactive materials that could be released, a person inhaling 0.2 micrograms of plutonium would be at an unacceptable probability of getting a fatal cancer.

4.3 The law requires that emergency countermeasures are put in place to control the incident and protect people from harm. However, because of the unpredictability of the course of an emergency, and the manner of the public and emergency service response, it is foreseeable that countermeasures might not work as planned, and be rendered ineffective by uncontrolled and unplanned factors 'on the day'. There are no acceptable methods that could easily reveal and hence deal with these factors and reduce their impacts with any scientific certainty.

4.4 Because of these uncertainties it is longstanding Government policy to take a precautionary approach and to limit the number of people who live near a nuclear installation and who might be harmed in a nuclear incident. This policy is particularly stringent for the zone subject to detailed emergency planning arrangements and within that zone sites closest to the installation merit the highest level of protection.

4.5 This Government policy applies to all licensed nuclear installations including AWE Aldermaston.

5 Why AWE presents a planning issue for the proposed Boundary Hall Development

5.1 The AWE Aldermaston site is a large industrial complex, where AWE handles high explosives and radioactive substances such as plutonium,

tritium and enriched uranium. The Ministry of Defence own the Aldermaston and Burghfield sites and contracts AWE plc to manage operations. The location of these facilities here is a result of historical circumstances.

5.2 Their primary function is to carry out work in support of the UK Nuclear Deterrent Programme to provide and maintain the warheads for the country's nuclear deterrent, Trident. The Government is committed to maintaining an independent nuclear deterrent and to Trident in particular. The work of the base is of national importance. It is important that the flexibility of the site to undertake this important work is not put at risk.

5.3 The work at AWE Aldermaston and Burghfield covers the entire life cycle of nuclear warheads: from initial concept, assessment and design, through to component manufacture and assembly, in-service support, and finally decommissioning and disposal. AWE at Aldermaston occupies some 750 acres and contains a wide range of industrial facilities including facilities utilised for the design, manufacture, maintain and decommission the warheads for Trident. In addition to materials normally used in industry, AWE also handle high explosives and radioactive substances such as enriched uranium, plutonium and tritium.

5.3 AWE is required to analyse the hazards and extent of the consequences of its activities. A radiation emergency could occur, for example, following a major uncontrolled fire in one of the AWE facilities where radioactive materials are handled. In such an event radioactive particles could be widely dispersed and might affect areas off the site. In the case of plutonium the main hazard is posed by inhalation. Extremely small amounts of plutonium, of the order of micrograms, leads to an increased chance of developing a fatal cancer. Larger amounts, of the order of milligrams, cause acute radiation poisoning and death if inhaled. Medical counter-measures such as taking potassium iodate tablets to protect the thyroid against the fission products released in accidents at nuclear power stations are not effective against the radioactive substances used at AWE. There are also potential consequences associated with the accidental release of the other radioactive substances. (Mr Robinson's evidence will provide further details.)

6 Proximity of Boundary Hall to AWE Aldermaston

6.1 The Boundary Hall development site is very close to the Southern perimeter fence of the licensed AWE site (see figures 1, 2 and 15). HSE prescribed the statutory Detailed Emergency Planning Zone (DEPZ) at AWE as a circle of 3 kilometres radius from a specified central point on

the site. Boundary Hall is approximately 1 kilometre from the centre of the DEPZ.

6.2 HSE's interest in the control of increases in population around AWE extends out to 8 kilometres radius. If developed, Boundary Hall would be one of the closest residential sites to the AWE Aldermaston facilities.

6.3 In addition, the use of land at Aldermaston is not fixed and there is no necessary interest in it being fixed. Future developments at AWE may result in moving facilities closer to the site boundary which would increase further the potential hazard posed to the Boundary Hall site. In terms of location, therefore, Boundary Hall is one of the most unsuitable sites in terms of radiological effects that might possibly emanate from AWE.

7 Nature of harm posed by the proximity of Boundary Hall to AWE

7.1 Taking plutonium as an example of the radioactive substances used at AWE, an accidental release of plutonium would take the form of an air-borne plume of fine particulate material. When particulate material is dispersed in this way, much higher quantities are experienced closer to the source of release. For offsite populations, the highest resulting radiation doses would be experienced just outside the perimeter fence at locations such as Boundary Hall.

7.2 As required by Radiation Emergency Preparedness and Public Information Regulations (REPPIR) 2001, the 3 kilometre boundary of the DEPZ is determined as the area in which a member of the public might receive a radiation dose of 5 millisieverts (mSv) or more in the event of a nuclear accident. Potential doses are greater the closer you are to the site. The Boundary Hall development is adjacent to the Aldermaston site fence and approximately 1 kilometre from the centre of the DEPZ. Therefore, in the event of release of radioactive material, the dose at the Boundary Hall location would be significantly larger, of the order of 5 to 6 times, the dose predicted at the edge of the 3 km DEPZ. At potential doses of 30 mSv, the Health Protection Agency recommends consideration of evacuation as the appropriate counter-measure.

7.3 Given the nature of the harm involved, albeit with a very low probability of its occurrence because of the rigorous safety precautions taken on site, the first and most obvious step is to limit the population exposed to the harm, by not putting more people in harm's way, i.e. by not allowing future significant residential developments in the areas where mitigation of consequences is most important.

7.4 There are existing residential areas close to the AWE Boundary, but most are largely 'historic' and predate the application of Government

policy, described below, or were developed before HSE first licensed AWE in 1997 when full Crown Immunity applied to the MOD establishment. However, HSE has identified its own administrative failure in that in 2001, in the early years of the licensing of AWE it should have objected, at the consultation stage, to the residential development at the site now known as Falcon Fields and Kestrel Mead (West Berkshire Council planning application reference 00/0260). Historic failure to restrict development so close to the facility does not justify further development. Rather, consistent with policy, it enhances the reason to further limit development now.

7.5 Thus, the current situation has resulted from past building decisions and this should not be taken as a justification for making a poor situation worse by allowing further very substantial development in this location.

8 Impact on Emergency Arrangements

8.1 Emergency response, as a mitigation measure, is not highly predictable; in the sense that it has to deal with a wide range of scenarios, not all of which are precisely foreseeable. Emergency planning is precautionary in its approach and its assumptions. It recognises that because it must deal with human behaviour (e.g. in evacuation) the

best plans can be upset by decisions of individual members of the public.

8.2 Further HSE is aware of and shares the concerns and objections to Boundary Hall expressed by the majority of the key statutory authorities involved in emergency arrangements and delivering the emergency response in the event of an incident. In summary these are:

a) the development would put more people in harm's way, in a location that needs emergency arrangements and response;

b) the particular location of Boundary Hall is in closest proximity to AWE with the highest potential dose exposure;

c) there is an increase in the number of people who would require assistance and an increased number of responders needing to go into potentially hazardous locations – and for longer periods of time;

d) all evacuees (those attempting to leave the area whether on or against official advice) would need to use the most relevant routes, possibly hindering the emergency services.

8.3 Comments on the Developer's (CALA Homes's) Environmental Statement prepared by WSP: Chapter 17 Emergency Planning Issues

Mr Saunders's evidence gives more detail about HSE's views on this Chapter but HSE is concerned about the following claims:

a) It is claimed that the situation around AWE Aldermaston site cannot be "bad" otherwise the existing plan is insufficient and the site should be closed. However, the terminology of "bad situation" refers to the over-population around AWE Aldermaston and a direct correlation with the adequacy of the off-site emergency plan should not and cannot be made.

b) It is claimed that the Local Authority Off-Site Plan is robust and compliant under REPPIR and capable of accommodating the extra dwellings with minimal increase on the whole population. However, the current AWE Aldermaston off-site plan does not specify how many people the responders could accommodate should an off-site nuclear emergency occur. It does not state that it can cope with major fluctuations in population around the site. Whilst the Emergency Plan is regularly tested there is no modelling available to determine the effectiveness of the emergency arrangements, due to the

uncertainties on the actual consequences on the day, and the actions that would be taken by the public in response to any accident.

c) It is claimed that HSE witness the tests of the Off-Site Emergency Plans, required under Regulation 10 of REPPIR, and that HSE declare a satisfactory demonstration of the effectiveness of the Plan. The AWE Aldermaston off-site emergency plan was last tested on 17 November 2007. Whilst no significant issues were identified that would indicate that the plan was not fit-for-purpose, a number of areas for improvement were identified and were progressed accordingly through the process outlined above. The plan will be tested again on 10 November 2010. Whilst HSE considers the AWE Aldermaston off-site emergency plan to be compliant with the requirements of REPPIR, the assessment of the implementation of the plan is done by the multi-agencies during the triennial off-site emergency exercises. Any improvements to the plan that are identified are implemented by West Berkshire Council via the Local Review Committee. In addition, HSE carried out a benchmarking exercise to identify good practices and areas for improvement. A number of improvements to the AWE Aldermaston were identified as part of this exercise. No plan is perfect. Further none of this should detract from the higher level principle that it is not sensible to plan to put over 200 people in a

position where they might foreseeably be placed into a nuclear emergency.

d) It is claimed that the current off-site plan was revised with the HSE site inspectors as part of a mandatory review process required under REPPIR and passed it as fit for purpose. It is further claimed that should the Off-Site plan be deemed unfit for purpose the HSE should take immediate remedial action to resolve any issues of concern and consider suspension of the site licence.

e) It is claimed that the Developer has consulted widely amongst stake-holders, and that the traffic arising from the Proposed Development will have a limited effect on access to the AWE Aldermaston in the event of an accident, as the AWE has its own on-site fire service and emergency arrangement on site to contain and resolve any potential emergency from their activities. However, HSE believe that for any emergency incident on site, assistance from Blue Light services will be required and would be substantial. Boundary Hall is adjacent to the main artery road leading to the main access gate to site. HSE believe that any congestion on this main artery road leading to site would hinder any emergency response by Blue Light services required of them under the off-site emergency plan. Based on the evidence presented by the relevant emergency authorities, HSE do not believe

that BDBC satisfactorily addressed the extensive concerns/ objections raised by the multi-agencies with duties under the off-site emergency plan, or cooperated fully with West Berkshire Council who are responsible for the off-site emergency plan, to the extent necessary to gain confidence that the off-site emergency plan could accommodate and protect the additional 268 residents of Boundary Hall prior to the approved planning application. HSE also believe that the increase in the population by the proposed development would make traffic management more difficult around the main access point to site and result in delays in the assistance of emergency services on site.

f) It is claimed that the Local Authority Off-Site Plan confirms that evacuation from the area would not be necessary within 24 hours of an incident. They state that the new residents (of the proposed development) would be indoors or have refuge where sheltering is seen as a highly efficient protection factor. HSE acknowledge that whilst sheltering is recognised as providing a highly efficient, immediate protection measure, it is only effective for a limited number of hours. It is also not feasible to maintain sheltering for prolonged time periods do to human health care requirements e.g. food and water, anxiety etc. Furthermore evacuation of the population in the affected area within the DEPZ may be required either during the emergency to protect the public from health effects, or after the

emergency to assist in monitoring and clean-up of the area. Those to be evacuated would be prioritised on a risk basis and the residents of the proposed development would be a high priority due to their immediate vicinity to the site boundary which has the highest risk. Further evacuation might result from an “on the ground” judgment by the emergency services (see the recent fire for example) or from residents self evacuating or from a combination of both these factors. It is wrong to proceed on the basis therefore that evacuation is not a foreseeable consequence.

g) It is claimed that the proposed development will increase the population within the DEPZ by some 268 people, compared with an existing population in the order of 15,000. This is an increase of circa 2%, and would not be a material factor in traffic management controls during an off-site nuclear emergency. HSE disagree with this statement for the following reasons. If an off-site nuclear emergency were to occur due to the release of radioactive material, this material would be dispersed into the atmosphere. . Public protection measures would be implemented in the relevant sectors. Since the DEPZ is divided into 16 equal sectors the increase in population for emergency planning purposes should be considered on the sector population rather than the full 360° DEPZ. This means that the increase in population brought about by the development in the relevant sector (Sector J) is

actually 12.5% to a distance of 2km and 9% to 3km based upon the percentage increase of the Boundary Hall residents compared to the current population. In HSE's opinion this is a very significant increase so close to the facility.

9 Policy Considerations

9.1 The preceding sections have set out HSE's objections to the Boundary Hall proposal on the grounds of basic health and safety principles of first avoiding exposure to harm and then mitigating its effects. These issues are by themselves powerful reasons to refuse consent for this application. But a proper understanding of these issues has been in place for some time and is reflected in appropriate policy on the location of development near to nuclear facilities.

9.2 The framework of well established polices and regulatory requirements which have UK Government and international pedigrees is entirely consistent with the HSE's approach in this case. The following sections of this proof set the principles which are applied to the control of industrial activities, including nuclear – these include the operation of permissioning regimes (including nuclear installation licensing) to control the activities themselves (as described in Section 10) and the essential complementary role played by land use planning controls (Sections 11–16) including their application to the AWE and Boundary Hall sites.

10 Major Hazard control principles including the UK nuclear licensing regime

10.1 Health and safety in the major hazard - i.e. nuclear, chemical and offshore industries - is regulated via ‘permissioning’ regimes. These regimes are characterised by the stringent but proportionate health and safety controls that are required at the start or continuation of particular work activities. Application of permissioning in the nuclear sector requires that all licensees must document the hazards created by their activities and demonstrate the validity of control measures in place to the satisfaction of the health and safety regulator.

10.2 Permissioning regimes are exceptional responses to conditions which could present significant health and safety risks, and in the case of chemical and nuclear these risks could affect the public.

10.3 <u>The Precautionary Principle</u>

While the development of regulatory approaches to the nuclear industry and other major hazard industries have taken place separately, they share common underlying concepts of a ‘precautionary principle’ and multiple layers of measures to reduce hazards and risks – “defence in depth”. The precautionary principle requires, particularly in areas of uncertainty, action which favours protection of the public, such that

measures should be taken to prevent foreseeable harm. This would include limiting populations in areas where serious consequences are accepted to be foreseeable.

10.4 Defence in Depth

Defence in depth is a fundamental principle of nuclear safety which underpins the HSE NII's safety assessment principles and other national and international standards, for example, those of the International Atomic Energy Agency. This establishes a hierarchy of hazard and risk control measures to meet the following 'safety' objectives:

LEVELS OF DEFENCE IN DEPTH

Levels of defence in depth	Objective
Level 1	Prevention of abnormal operation and failures
Level 2	Control of abnormal operation and detection of failures
Level 3	Control of accidents within the design basis
Level 4	Control of severe plant conditions, including prevention of accident progression and mitigation of the consequences of severe accidents
Level 5	Mitigation of radiological consequences of significant releases of radioactive materials

In the UK, the strategic, initial siting of nuclear installations, and local consideration of mitigation measures, are important elements of public protection. Mitigation of the consequences of significant releases of radioactive materials (i.e. Level 5) is achieved through a combination of

off-site emergency response and control of residential and commercial developments in the vicinity of the installation.

10.6 The application of the Nuclear Installations Act 1965 ("NIA 65"), licensing regime to UK nuclear installations provides a mechanism to deliver high standards of safety in the operation of the facilities themselves. This means that the objectives of levels 1 to 4 in the defence in depth concept are met with a high degree of confidence. However, as with other major hazards, the total control package must include the residual possibility of a release of radioactive material and provide mitigation through population control, expressed in initial siting criteria and in the land use planning control of subsequent development in the vicinity of the installation, together with on and off site emergency planning. The HSE set the DEPZ based upon the licensee's analyses of the hazards and risks from their operations which could give rise to a release of radioactive material off their site. (See Mr Saunders's evidence.)

11 Role of land use planning in the context of mitigation of radiological consequences

11.1 The nature of major incidents is that they are infrequent and sometimes involve unforeseen circumstances or unpredicted chain of events. For

example, the large vapour cloud explosion which happened at the Buncefield Oil Storage Depot in 2005 was not considered to be reasonably foreseeable until it occurred, and its exact cause is not yet fully understood.

11.2 The measures taken by a nuclear site licensee must continue to demonstrate that the likelihood of an emergency is low. However, it is not prudent to ignore the possibility of such an emergency because the consequences could be extremely serious unless mitigation measures are available and can be deployed effectively to protect people.

12 Policy for Land Use Planning Siting and Development Controls – "Preserving site population characteristics throughout the operating life of a nuclear installation"

12.1 The Government policy for nuclear installations was first established for the initial siting of nuclear power reactors, and based on the principle that population density close to a site has to be sufficiently light, to enable effective emergency countermeasures such as the evacuation of people to be taken in the very unlikely event of an accidental release of radioactivity having effects beyond the site boundary. Sites were only deemed acceptable if the surrounding population with all likely future development will remain consistent with the siting policy over the

life of the installation. This has been assessed by comparing the expected future total population distribution around the site with numerical criteria, which give greater relative importance (i.e. using weighting factors) to those people closer to the site than those further away. The nature and place of the numerical methodology will be described in Dr Highton's evidence. However, weighting factors relate to the strength of the source term, which is the quantity of radioactive material which is dispersed into the atmosphere. The atmospheric dispersion of these released radioactive particulates can be assessed by using the classic Gaussian Plume Model. In this model the quantity of radioactive material and hence radiation dose, in a 'cloud' of particulates will reduce as it mixes and dilutes with air. The atmospheric concentration of radioactive particulates at a distance (r) from the point of release, will continuously reduce, exponentially, according to a simple mathematical formula $1/r^{1.5}$, where the value of the exponent '1.5' is the vertical atmospheric dispersion coefficient for the Gaussian model. What this means. in short, is that those closest to the point of release are likely to receive higher doses of radiation than those further away.

Development controls which limit the number of people who could be harmed in a nuclear emergency, are the only effective non-engineered, i.e. passive, means of restricting radiation exposure and dose.

12.2 The Government's demographic policy was initially derived in relation to civil nuclear power reactors. It was subsequently applied at all civil nuclear, fuel manufacture and radioactive waste activities when they were made subject to licensing in the 1990s, and then to Defence sector installations as and when they were brought into licensing. This policy has therefore applied to AWE, Aldermaston since 1997. Prior to this date, the existence of a nuclear facility here was a result of historic circumstances and was not the subject of HSE control or policy.

12.3 When assessing whether a development has the effect of "preserving site 'population' characteristics" (to ensure that the number of people put in harm's way is appropriately limited and in maintaining the effectiveness of off site emergency arrangements close to the installation) the principles set out above mean that strictest control of development is required closest to the installation and especially within the DEPZ.

13 Derivation of Land Use Planning Policy

13.1 The longstanding government policy from the 1960s (Appendix A1), *that after accepting a site for locating a nuclear power station, some controls on future development are necessary to maintain the population characteristics which make the sites acceptable within the policy.* The policy was further articulated at several public inquiries, such as Connah's Quay in 1971, and population guidance for the UK's nuclear reactors given in Hansard in 1988. More recently, starting in 2008, the need for this ongoing post licensing control for developments was confirmed in the Government's consultation document for the Nuclear National Policy Statement on new build power reactors.

13.2 In the UK's fourth (2008) and fifth (2010) reports on Compliance with the Convention on Nuclear Safety Obligations, the Government explicitly stated that whilst the Convention was restricted to reactor installations, "*The safety of other UK nuclear facilities that fall outside the scope of this Convention are also regulated* ***to the same standards,*** *so as to ensure that they are operated in a manner that maintains a high level of safety.*"

13.3 In relation to these matters, Section 17.30 (under Article 17) of the Report states that "*In March 1988 the Secretary of State for Energy*

stated that once a site has been accepted for a nuclear station, arrangements are to be made to ensure that residential and industrial developments are so controlled that the general characteristics of the site are preserved. The planning processes require that all relevant issues are addressed and discussed. The process also facilitates inputs from the public and other interested groups. HSE must be satisfied that the size nature and distribution of the population around the site are properly taken into consideration. If planning permission is granted for the site (i.e. new site) there will be planning controls to ensure that significant and unacceptable population growth does not occur." These clear statements indicating the applicability of the defence in depth principle including maintaining population status to all licensed facilities reflects HSEs own longstanding operation of the regime. It is for this reason that the consultation processes around Aldermaston have been put in place.

14 Application of Government Policy to the Boundary Hall

14.1 HSE NII carried out a demographics review in 2006 and as a result revised and reissued the consultation arrangements, based on 3 Consultation zones - Inner (3 kilometres), Middle (5 kilometres), and Outer (8 kilometres). These replaced the 1999 arrangements, which were based on a single consultation zone – which was coterminous with the

3 kilometre DEPZ. These arrangements were put in place by HSE through discussion with the licensee and local authorities responsible for land use planning, emergency planning and response.

14.2 The Boundary Hall development site is very close to the Southern perimeter fence of the licensed AWE site (see Figure 15). This means that in the event of an offsite nuclear emergency the public at this distance would receive the greatest harm from radiation doses.

14.3 For that reason, in October 2006 HSE provided advice to Basingstoke and Deane Borough Council (BDBC) against any substantial residential developments on the Boundary Hall site. The HSE advice was given via BDBC to the previous landowner in response to their pre planning enquiry. HSE NII's clear position does not appear to have been carried forward during the 2007 pre-planning discussions between CALA Homes and Basingstoke. HSE NII does not know why. Further, HSE NII was not invited to participate in these meetings, and subsequently learnt of the planning application only through AWE.

14.4 HSE has been consistent in its objection to any substantial residential development at Boundary Hall since such development:

a) would impact adversely on the policy to preserve site characteristics in the terms set out above;

b) would introduce a substantial increase in the numbers of people put into harm's way;

c) would put such people in a particularly close proximity to the AWE site and thus at greater potential from any release of ionising radiation from the AWE site.

14.6 In explaining the seriousness of its concerns, HSE undertook sensitivity testing against the "semi urban" 1988 Hansard population criteria. Against even this least restrictive criteria, a criteria used for AGR where DEPZ distances are habitually less than those for this site, demographic margins for development had been exhausted out to a point several kilometres into the zone beyond the DEPZ.

14.7 Thus HSE is clear that the proposal would not preserve the population characteristics of the site. It would alter them to an unacceptable degree which would place more people in harm's way and would put significant numbers of people at the heart of the DEPZ. The siting of Aldermaston is an historic accident. Even the last restrictive population criteria would be breached by a significant margin.

15 Comments on CALA Homes Environmental Statement on Land Use Planning Issues

15.1 HSE does not accept that the alternative approach put forward in Chapter 16 of the Environmental Statement is valid. Dr Highton's evidence gives more detail about HSE's views. However it is important to point out the application of the methodology supporting Government Policy is neither risk informed nor risk based. The NuSAC 2008 paper demonstrated to the satisfaction of the NuSAC members that the Hansard (1988) model was readily extendible to non-reactor nuclear facilities (NNFs) when cast in terms of site population factors (SPFs). Such an application only requires a knowledge of attenuation rate for an airborne off-site release of radioactive material and the population distribution around the site. The approach is neither risk based nor risk informed. That would require a site specific assessment.

15. A detailed critique of Chapter 16 is given in Dr Highton's evidence) but HSE's summary comments are as follows

a) uses a constant population with no weighting for proximity to source point;

b) assumes a single point source of release which is invalid for AWE;

c) does not take into account an exclusion zone;

d) attempts a risk analysis without access to site specific information and is therefore invalid.

16 Allocation of Boundary as a Housing Development Site

16.1 Consultation arrangements for individual development proposals were introduced in 1999 and in 2000 HSE was invited by BDBC to comment on its Local Plan (1996 to 2011). Whilst HSE has no documentary evidence about the outcome of this consultation, it was reasonable for HSE to assume that the recently agreed consultation arrangements for AWE would have featured in the post 2000 edition of the Local Plan – which does not appear to be the case. HSE understand that formal consultation on the local plan was carried out in 2003, and ended with the local plan Inquiry in 2005. Again HSE has no documentary evidence of either being consulted nor the outcome of any consultation. It is understood that the Local Plan was adopted in 2006, and it seems that by this time, neither HSE's consultation arrangements, nor its objections on public safety grounds to specific developments, such as the pre planning enquiry for residential development at Boundary Hall were taken into account (BDBC reference ENQ 17526). T his oversight was recorded in the Planning Inspector's decision report for the refused

appeal for residential development at Shyshack Lane (PINS Ref APP APP/H1705/A/09/2102664) in this statement:

> *"I find it somewhat surprising that the issue of restricting population in the DEPZ around the AAWE is not reflected in Development Plan policy which allows for new development in the area. From my questions at the Hearing it appears that the HSE considered that the consultation arrangements would be effective and that their concerns would take precedence over Local Plan policy. However I have seen no evidence, aside from any failure in the consultation procedure which has occurred in the past, that there is systematic monitoring of the smaller developments so that an informed assessment of the overall situation can be made. New development in the area may not necessarily involve a significant increase in population (e.g. because of the provision of more units but for smaller households), but from the evidence before me it is clear that there has been a material increase in population in the DEPZ. While the appellants argue that the proposed development provides for only 3 more units or an increase in the population of 5 over and above the extant permission, or 18 over the existing situation, it seems to me that it is the cumulative effect of such small proposals which has led to*

what the HSE now considers to be an unacceptable erosion of the demographic margins."

16.2 In these circumstances therefore, given the absence of any consideration of the issues of public safety, little weight can be given to the site's allocation as a saved policy from the earlier Local Plan. Had the public safety considerations been properly identified and taken into account I am clear that it would have been recognised for the reasons set out in this proof and elsewhere in the evidence, that it would have been inappropriate to place further people in such close proximity to the licensed facility.

17 National and International Implications

17.1 If the proposed development were to be permitted there would be the following implications:

a) it would have serious precedential implications for control of off-site populations around AWE and all other licensed nuclear installations in the UK;

b) it would impact upon the assurances on the siting and control of off-site populations given in the Government's Con-

sultation Document “Nuclear National Policy Statement” relating to proposed new nuclear power stations;

c) at an international level, the UK Government has repeatedly relied upon the current siting and land use planning controls in its triennial account of UK compliance with two International Conventions.

18 Overall Conclusions

This proposed development should be refused:

a) on the public safety protection grounds that it would increase the number of people potentially placed in harm’s way at a site very proximate to a nuclear installation;

b) It would compromise the effectiveness of the emergency response to any incident; and

c) on grounds that it fails to meet the clearly expressed Government policy on population limitations around nuclear licensed sites which were ignored in the preparation of the local plan.