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HEALTH AND SAFETY EXECUTIVE  
Senior Management Team  
**Societal Risk and Land Use Planning**  
A Paper by Pauline Nash  
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Cleared by Giles Denham on June 2008

**Issue**

1. The attached draft paper for the Board provides background information on Societal Risk and Land Use Planning.

**Timing**

2. For approval at the 2 July SMT Meeting to enable the paper to go to the HSE Board Meeting on 17 July 2008.

**Recommendation**

3. The SMT is invited to agree that the attached draft paper can be submitted to the Board.

**Background**

4. The paper has been produced at the request of the HSE Board. It will be supported by a presentation at the meeting of the Board on 18 July.

**Consultation**

5. HID, Policy Group and PFPD have been consulted on the paper.

<b>Health and Safety Executive Board</b>		<b>Misc Paper No: Misc/08/33</b>	
<b>FoI Status</b>	Partially Closed - Part paragraph 3 b and 3 c		
<b>Societal Risk and Land Use Planning</b>			

## Purpose of the paper

1. At its meeting on 28 May 2008 the Board asked for a paper on HSE's policy on land use planning around major hazard (non-nuclear) sites. This includes an update on the Societal Risk project, which is part of the LUP issue. This paper provides the factual background; at the meeting there will be a presentation of the current issues and future challenges.

## Background

2. A description of HSE's policy and process in giving land use planning advice is at Annex 1. Points to note are:

- a. HSE's function is advisory – a statutory consultee under DCLG planning legislation. The final decision on planning applications is made by the Local Planning Authorities (LPAs) (although in practice they nearly always accept HSE's advice);
- b. where the LPA does not accept HSE's advice, HSE has the option to request the DCLG SoS to 'call-in' an application for their own determination (in England and Wales). In Scotland this automatically happens;
- c. the advice system is aimed at achieving a balance between public safety and the need for development; HSE does not advise against all development even in the inner zone around major hazard sites. Neither does it automatically request 'call-in' whenever the LPA takes a decision contrary to HSE's advice.

## Argument

3. A number of recent developments have served to raise the profile of HSE's policies on LUP advice and pose challenges for the future. These will be explained in more detail in a short presentation at the meeting on 17 July. In summary however they are:

- a. Societal risk - this is the risk that a large number of people could be harmed by a single incident. At present HSE's LUP advice is based mainly on individual risk, i.e. the risk of harm to an individual in a specific location. Annex 2 gives more details of the work which HSE has undertaken together with other interested Government Departments over the last few years. Ministers agreed earlier this year that societal risk should be taken into account in HSE's LUP advice and work is under way to develop a system to put this decision into effect;
- b. the Buncefield incident - the vapour cloud explosion at Buncefield was of a type unforeseen when the consultation distances (CDs) around that (and other similar) site(s) were drawn up. →← HSE immediately started to review its LUP policy around large-scale petrol storage sites. This was also subsequently requested by the Major Incident Investigation Board

(MIIB) and led to a public consultation on the issue in 2007. As a result the CDs have been extended and a new 'Development Proximity Zone' introduced nearest such sites in which all but 'not normally occupied' developments would be 'advised against' - on an interim (though not short-term) basis until the explosion mechanism is better understood and the LUP advice can be reviewed in the light of that knowledge.

- c. →←
- d. Planning Bill and Infrastructure Commission - DCLG is currently taking new planning legislation through Parliament to reform the planning system in England. This is unlikely to have immediate major implications for HSE, although the streamlining of long-term development/structure planning may present opportunities for HSE to introduce its LUP advice at an earlier stage in the process; and it will be necessary to develop a good relationship with the Infrastructure Commission in its work of considering major strategic projects.
- e. Redevelopment pressures - in recent years there has been increased pressure on Local Authorities and development agencies to meet targets for the provision of housing and regeneration, much of it on brownfield sites. Many such sites are former industrial land in the vicinity of major hazard installations. As a result the constraints imposed by HSE's advice against development have led to criticism (often public, as from the former Mayor of London and in 'Planning' magazine) and greater pressure on HSE to justify or moderate its advice. Local Planning Authorities are also reluctant to revoke Hazardous Substances Consents for sites that have not stored for some time, or have no intention of storing, the quantities of hazardous substances reflected in the consultation distances. In many cases it is possible to negotiate acceptable solutions but this is resource-intensive. In some cases this has not been possible; most notably, a proposed new stand/hotel development at the Oval Cricket Ground, near Kennington Gasholder station, has been called in for a Public Inquiry at HSE's request. The outcome of the Inquiry will be important in determining HSE's approach to LUP advice thereafter.
- f. Relationship with LPAs - the pressures described above have illustrated that some LPAs, despite efforts to explain HSE's role during the roll-out of the PADHI system - have a limited understanding of it. On the other hand, many of them feel that HSE has not explained its policies well, for example when increasing CDs around certain sites in response to new evidence or science. Work has started to improve the relationship; for example HSE ran a successful seminar for LPAs in London last February and further similar events are planned.

## **Presentation**

4. HSE's role in LUP advice has assumed a higher public profile over the last 18 months for a number of reasons including the Buncefield incident and the pressures from Local Authorities to redevelop brownfield sites in the vicinity of major hazard installations. This has required a more robust public defence of HSE's role than in the past. It has also meant that HSE has had to continually re-prioritise its LUP activities and redeploy its limited LUP technical and policy

expertise away from, for example, advising LPAs on Hazardous Substances Consent applications and setting CDs around hazardous installations. This has led to significant backlogs of work.

5. The pressures are unlikely to diminish in the near future and HSE needs to continue to improve its relationships with stakeholders and have an effective explanation of its role. The forthcoming Planning Inquiry on the proposed development at the Oval Cricket Ground will focus much attention on this issue from the Press and public.

#### **Financial/Resource Implications for HSE**

6. There are no resource implications for HSE arising from this information paper. Current annualised HSE resources devoted to LUP include salary costs of £1.3m and £2.5m on science, research and IT in delivering the risk assessments, developing new models, maintaining existing models and PADHI and developing new models e.g. on societal risk.
7. Cost recovery – HSE's input into the LUP system is funded from its PES settlement. However, last years cost recovery review suggested that HSE should consider recovering costs in this area. Ministers agreed that DWP/HSE should pursue this and officials are engaging DCLG officials on this matter.

#### **Action**

8. The Board notes the contents of this paper.

#### **Paper clearance**

9. This paper was produced by Gwyneth Deakins and was cleared by the Senior Management Team on 2 July 2008.

## Annex 1

Land use planning controls have been a feature of the UK's strategy for managing major hazards for over 30 years. This originated largely from the Flixborough incident in 1974 in which a chemical plant exploded resulting in 28 deaths. The Advisory Committee on Major Hazards (ACMH), which was appointed by the Health and Safety Commission to help to develop regulation on major hazards in the wake of the incident, established a three-strand approach to 'risk' control for major hazards, which is reflected in legislation:

- 1 Identification of the major hazards – sites storing defined quantities of specific toxic or flammable substances
- 2 Assessment and Control – measures taken by operators both to
  - a) prevent, so far as is reasonably practicable, major accidents and
  - b) reduce the chances of any incident that does occur escalating to more serious consequences e.g. one explosion leading to another
- 3 Mitigation – of consequences (lessening the effects) of major accidents that occur after the loss of 'prevention' and control. This is done through measures such as land use planning controls and emergency planning.

3. In relation to 'mitigation' ACMH acknowledged that "absolute safety in any sphere of human endeavour is impossible and it would be imprudent not to take account of the possibility of a major accident, however remote." So despite health and safety legislation to control risks as far as is reasonably practicable, there remains a chance of a major accident, whose impact upon people outside the installation could be lessened by mitigating measures such as keeping major hazard plants 'away from centres of population'.

4. ACMH also acknowledged that whilst ideally major hazard sites would be kept well away from centres of population, this was not realisable in practice, and so recommended that in principle a LUP system should aim for almost complete protection from small-scale, more frequent accidents and 'worthwhile' protection from larger but more infrequent accidents. The 'vulnerability' of members of the public affected (e.g. schoolchildren, elderly people) should also be taken into account.

5. The 1996 Seveso II Directive introduced these principles across all of the European Union. It was implemented in GB by the Control of Major Accident Hazards Regulations (COMAH) and, in respect of LUP controls by various pieces of planning legislation which, it is important to note, are 'owned' by DCLG and the devolved administrations, not HSE.

6. Current legislation includes the Planning (Hazardous Substances) Act 1990 and the associated Planning (Hazardous Substances) Regulations 1992 as amended, which require sites holding certain hazardous substances above defined limits to have consent from the Hazardous Substances Authority (HSA), which is usually the local planning authority (LPA). By law the HSA must consult HSE when it considers applications for these Hazardous Substances Consents. HSE advises the HSA on whether consent should be granted, based on its view of the hazards and risks posed by the hazardous substances to people in the surrounding area and taking account of existing and potential developments. HSE bases its land use planning

advice on historical data and the presumption that site operators are complying with the law. A number of sites that existed when the consent legislation was introduced were given 'deemed' consent based on the quantities of hazardous substances stored at the time. LUP around these sites was not previously subject to such controls and many therefore have residential and commercial properties very near to them, as is the case with the Kennington Oval.

7. If consent is granted HSE notifies the LPA of a 'consultation distance' (CD) around the site, which is divided into three zones. When dividing the CD into zones, HSE uses the information given by the site operator in the Hazardous Substances Consent application. HSE produces a map with the three zones around the site, defining levels of likely risk or harm to any individual within each zone. The nearer the individual is to the major hazard site, the greater the level of harm or risk would be. In each case the risk relates to **an individual** sustaining a specific level of harm - the so-called 'dangerous dose' or worse. (The three zones represent either defined levels of harm; or levels of individual risk of 10 cpm (chances per million) in the inner zone, 1 cpm in the middle zone and 0.3 cpm in the outer zone per year respectively of receiving a dangerous dose or worse.) It should be noted that risk or harm considered in this context does not include damage to property except insofar as this may impact directly on the health and safety of people. The outer edge of the third zone represents the edge of the consultation distance.

8. Under the Town and Country Planning (General Development Procedure) Order 1995 HSE must be consulted by the LPA on any future applications for planning permission for specified development within these zones. The proposed development is assigned to one of four 'sensitivity levels', depending on its intended use, the number of people at the development, the intensity of the development and whether it is intended for 'vulnerable' people such as schoolchildren.

9. In the majority of cases (98%) the LPA follows HSE's advice. In those (rare) cases where the planning authority is minded to grant planning permission against HSE's advice, it must give HSE notice and allow twenty-one days to pass before making a decision. In these cases, HSE further reviews the application and if it considers the risk to people is of major significance, it may request that the application be 'called-in' for determination by, in England, the Secretary of State for the Department of Communities and Local Government and, in Wales, the Welsh Assembly Government. In Scotland, if a planning authority is minded to approve an application contrary to HSE's advice, it has to notify the Scottish Ministers who may decide to call in the case for their own determination<sup>1</sup>. HSE has made only 4 requests for call-in in the last 30 years, all of which have been granted.

10. During 2006 and 2007, HSE gave all planning authorities in England, Scotland and Wales on-line access to HSE's land use planning decision tool, PADHI+ (Planning Advice for Developments near Hazardous Installations). The PADHI+ system consists of the consultation zone library (CZL) for all hazardous installations and pipelines together with the PADHI+ advice generator. The system was based on a codification of over 25 years' experience of HSE giving advice to LPAs on developments. Table 1 shows the matrix for generating HSE's advice to LPAs.

**Table 1 Matrix for generating HSE advice on planning applications around major hazard sites**

Level of Sensitivity	Development in Inner Zone	Development in Middle zone	Development in Outer Zone
1	DAA	DAA	DAA
2	AA	DAA	DAA
3	AA	AA	DAA
4	AA	AA	AA

Sensitivity Level 1 - Example: Factories

Sensitivity Level 2 - Example: Houses

Sensitivity Level 3 - Example: Vulnerable members of society e.g. primary schools, old people's homes

Sensitivity Level 4 – Example: Football ground/ large hospital

DAA means **Do Not Advise Against Development**

AA means **Advise Against the Development**

11. HSE is not consulted by LPAs on their long-term development plans. At one time HSE was a statutory consultee for such plans but seldom had the resources to do so and following a review by DCLG was removed from the list of statutory consultees. An outcome of the societal risk exercise (see Annex 2) is that HSE is likely to be consulted by LPAs with high societal risk sites in their areas.

12. There was a 'fundamental review' of HSE's LUP advice system which concluded in 2002. As part of the review a set of objectives and principles to govern this work, based mainly on the ACMH principles, was drawn up, in consultation with industry, LPAs and other Government Departments. They were published as part of the 2007 public consultation on LUP around large-scale petrol storage sites, and endorsed in the response.

## Annex 2

### Societal Risk

1. 'Societal risk' is a way to estimate the chances of numbers of people being harmed from an incident. The likelihood of the primary event (an accident at a major hazard plant) is still a factor, but the consequences are assessed in terms of level of harm and numbers affected, to provide an idea of the scale of an accident in terms of numbers killed or harmed. As explained in Annex 1, at present HSE's risk estimates which form the basis of its LUP advice are mainly based on calculations of individual risk.

2. Societal risk is not a new concept. In the 1960s and 1970s, sophisticated risk assessment techniques were developed which enabled experts, for the first time, to analyse in numerical terms the likelihood and consequences of various accident scenarios at major hazard installations. But such techniques were, and still are, very difficult and costly to carry out, requiring a lot of time and money, and the accuracy of the results is uncertain. More recently HSE developed techniques which meant it could use the information now provided by site operators in safety reports required by the COMAH Regulations post -1999 to make a rapid but approximate estimate of societal risk levels. Therefore it was possible to consider including societal risk in the LUP advice given by HSE to LPAs.

3. In view of the potentially wide-ranging implications of this initiative, for example for industrial, housing and planning policies, the issue was considered by an interdepartmental Government Task Group, chaired by the Cabinet Office, and comprising a number of Government departments with an interest in the issue. These included the Health and Safety Executive (HSE), the Department for Communities and Local Government (DCLG), the Department of Trade and Industry (DTI) and the devolved administrations in Scotland and Wales.

The key objectives of the Task Group are:

- Ensuring the health and safety of workers and those living round major hazard installations.
- Enabling available land to be put to the most efficient and productive use for housing, economic development, and public services and amenities.
- Having a regulatory environment in which business and industry can invest and flourish, not only producing employment and wealth, but also meeting the UK's strategic needs and delivering sustainable economic development

4. As a result of their work HSE published, on their behalf, a consultation document [ref] in April 2007. The document explained that there are some 50-60 sites in GB where societal risk levels are likely to be significant; these include:

- Chemical plants, where toxic substances are manufactured or used.
- Some water treatment plants, where chemicals are stored for use in water purification.
- Large liquefied petroleum gas (LPG) and liquefied natural gas (LNG) storage facilities.

5. Almost 5000 people downloaded the consultation document from the HSE website. 94 responses were received in total, including local/planning authorities, developers, members of the public, employers, and Government Departments. A large majority of respondents were in favour of taking account of societal risk in both the assessment and provision of on-site control measures and the decision making process for land development around sites. Furthermore, for land use planning purposes, most respondents agreed that societal risk should be considered when drawing up local development plans as well as when considering individual planning applications. A small number of respondents had expressed concerns about the imprecise nature of the societal risk calculations and whether the existing methodology was suitable for application in site specific cases. Some respondents considered that any advice provided needed to be clear, unambiguous and to provide relevant information to enable balanced decision -making.

6. The majority of respondents were in favour of HSE providing societal risk advice to LPAs in a new format. However, a sizeable number of respondents were in favour of retaining the existing AA/DAA format.

7. In their comments on various questions respondents raised a number of “technical” issues relating to how societal risk should be measured, how it might be taken account of in the future, etc. These included in particular questions about measuring societal risk, the scope of the new policy and questions about the mechanism of delivery including issues of cost.

8. In the light of the general endorsement of the principle of including societal risk in HSE's LUP advice, Ministers agreed in January 2008 that the necessary further work should be undertaken to put the principle into practice.

9. HSE has established two workstreams:

- a forum comprising planning officers with high societal risk level sites in their areas, representatives of Government departments and HSE whose terms of reference are:

‘To advise the relevant Government departments and devolved Administrations (DCLG, WA, SG, HSE, BERR) on practical ways in which to incorporate societal risk evaluations by HSE into land use planning near non-nuclear major hazard sites’.

This group has met twice and held constructive discussions about the detail of how HSE's advice on societal risk might be delivered to LPAs, both on long-term development plans and on individual planning applications.

- a small advisory group (comprising representatives of academia, industry, safety professionals, HSE and OGDs) which will operate as a small, focused, ‘task-and-finish’ group of technical experts to advise, challenge and support the development of a societal risk methodology, criteria and delivery mechanism suitable for use in land use planning and assessment of on-site measures. In particular:

- To comment on HSE's developmental work through a challenge function on technical content.

- To review as necessary and advise on the fitness for purpose of technical positions used in existing LUP advice and the use of these positions in the calculation of societal risk.
- To advise on further work, research or consultation needed to resolve estimation of societal risk.
- To provide specialist advice on review/revision of HSE's 1989 publication "Risk Criteria for LUP in the Vicinity of Major Industrial Hazards".
- To comment on the differences between the bases of HSE's risk assessment for LUP and an operator's risk assessment for compliance.
- To advise on guidance on how duty holders might comply with societal risk requirements and how HSE can assure compliance.
- To dovetail with outputs from the Local Planning Authority advisory group.

10. Alongside this there are research projects supporting the societal risk work, including a 'base document' to support the work of the small technical advisory group, and the development of a 'toolbox' to assist the calculation of societal risk levels.

11. It is planned that by the end of the year the work of the two groups can be coordinated so that a system can be designed and 'piloted' with one or two LPAs in early 2009 i.e. the societal risk advice system would run on a virtual basis alongside the actual planning system. The lessons learned would lead to a full-scale introduction in 2010.