

HSE Consultation Document 212 on Societal Risk

Buncefield Board response

Introduction

1. In grappling with the many issues thrown up by the major incident at Buncefield in December 2005, the Board has often been faced with the question of why the planning system in the round does not address the total population at risk from a major hazard site.
2. Consideration of the complex issues surrounding Societal Risk goes back a long way. This includes the pioneering risk assessments at the Canvey complex in the late 70s, HSE documents published in 1989 (*Risk Criteria for LUP in the Vicinity of Major Industrial Hazards*) and *Quantified Risk Assessment: its input to decision making*), a study by the Advisory Committee on Dangerous Substances of transport major hazards (1991) and Reducing Risks Protecting People (R2P2). However, this is the first occasion of which the Board is aware that a document has focused exclusively on societal risk and sought public views. The Board therefore welcomes the publication of this Consultation Document, and is keen that the process of development and public consultation continues.
3. The Document offers a very general and qualitative treatment of societal risk without offering supporting evidence. So it needs following up with more detailed work intended to achieve effective, workable policies and procedures. For instance, it states that it is difficult to calculate societal risk round a specific site, and the Board would have liked more explanation of this and the uncertainties involved. Other questions arise, such as how to take account quantitatively of society's well established aversion to multiple fatality events? And what happens when a single population is exposed to risk from two or more sites in close proximity? And should major hazard pipelines be considered for their societal risk (which the Board understands is not currently the case)?
4. The Board has also made clear its view that the issues of Land Use Planning (LUP) and Societal Risk are inextricably linked and would have preferred to see a single Consultative Document dealing with both issues in an integrated way. The Board has, however, already responded to the first Document concerned with LUP issues round 'Buncefield-type' sites. For convenience, the first two sections of that response are reproduced here as an Annex.
5. In the Annex at paragraph 14, the Board sets out its view that the planning system round major hazard sites merits review and identifies three objectives that it believes the system should achieve. One of these is a system that registers and responds to the cumulative effects of serial planning decisions other than by just expanding the zone

distances. The Board therefore hopes that emerging conclusions from this consultation exercise are integrated into a wider review and development of the planning system.

Economic Issues

6. The Board is pleased that the Initial Societal Risk Regulatory Impact Assessment (RIA) has a much wider focus than the RIA produced for the LUP Consultation Document. It takes a much wider perspective and incorporates many of the aspects that the Board felt were missing in the LUP RIA. For example, the Societal Risk RIA considers costs to the industry and wider society as well as costs incurred by developers.
7. The RIA also provides good hypothetical examples of societal risk to illustrate why costings can currently only be carried out on a case by case basis. The RIA reaches the valid conclusion that societal risk is so site specific and raises so many questions about how it should be defined, that it is at present virtually impossible to provide economy wide costings. It may be that as the policies develop an economy wide costing can be carried out.

Question 1. What factors and issues do you believe should be taken into consideration when determining what might be unacceptable in terms of societal risk?

8. Societal risk is a topic characterised by uncertainty, imprecision and lack of recognised benchmarks. So before addressing the question of 'what might be unacceptable', agreement needs to be reached between key parties to the system (planners, developers, operators, regulators etc) as to the way societal risk is measured, evaluated and what data sources are required. Even the means of attributing a single figure to the societal risk posed by a specific site builds in a number of assumptions and judgements, and carries with it many uncertainties. Another problem is reconciling societal risk measurement which is based on the probability of fatalities with the land use planning processes where the calculations are based on the risk of receiving a dangerous dose. So there are certain key issues which need resolving before technical solutions can be formulated.
9. The first question is whether the societal risk criterion which HSE proposes for COMAH major hazard sites is the right one (paragraph 3 of Annex 3). Also the techniques to 'sum up' societal risk (paragraph 5 of Annex 3) include a factor which gives higher weighting to more serious but less frequent events, sometimes known as scale aversion. The Board notes that this is discussed in the RIA and has the effect of shifting the 'balancing point' in cost benefit calculations. So agreement is needed on the degree of this weighting and how it should be applied.
10. Secondly, 'unacceptability' implies powers to require introduction of risk reduction measures, if necessary through enforcement action. Health and safety law is based on the concept of 'reasonable practicability'. The legal test for this looks at costs in the widest sense and the expected level of harm to people. Only where there is a 'gross

disproportion' between the two is it legitimate not to take further control measures. The size of the population at risk should be one of the factors that influence what are reasonably practicable measures, but how should this factor be weighted to take into account societal risk when considering enforcement? A related question is whether there should be different criteria applied for land use planning and for COMAH enforcement (see paragraph 17)?

11. Also the Board, in responding to the LUP Consultative document (paragraph 12 of the Annex to this response), makes the point that there are many types of harm arising from a serious incident other than just direct physical harm, which nonetheless can have a serious impact on people. Damage to homes, the environment and economic infrastructure are examples. The Buncefield incident illustrates the point that the consequences and level of public concern are not determined only by the degree of physical injury caused. The Board believes that these additional factors should be taken into account.
12. Nonetheless, the Board takes the view that the current priority is to develop a system that registers and responds to 'societal risk', and is integrated with the LUP system. Thereafter it can be further refined. Probably only after some of these technical issues have been agreed and better data is made available can the issue of unacceptability be addressed in any meaningful way.

Question 2. Do you think that assessment of societal risk should be used in the control of major hazard sites?

13. Yes. The Board has consistently been making the point that the system should take account of the scale of risk to the total population from a major hazard site. Conducting a quantified risk assessment carries resource implications for both industry and HSE. Such calculations may be necessary for many COMAH sites if societal risk is to be evaluated.
14. In agreeing though, the Board recognises that this introduces the potential for societal risk considerations to restrict economic development. It creates a challenge, not only to agree how societal risk is measured (see paragraph 8), but also to make the process transparent and comprehensible to the wider public. If the parties involved in the planning process are to feel fairly treated when decisions go against them, then methods for measuring societal risk and the terms for expressing it must be robust and widely accepted.

Question 3. Should societal risk be taken into account by site operators when considering reasonably practicable on-site control measures?

15. Yes. In answering Q1 (paragraph 10) the Board has raised issues about 'reasonable practicability', 'gross disproportion' and enforcement. In the context of this question it would agree that site operators must take account of the level of harm and numbers potentially affected by an event arising from their activities.

Question 4. In any cases where development would raise societal risk levels significantly should consideration be given to sharing the costs of any measures that might counter such an increase in order to enable development to go ahead?

Question 5. If so what arrangements do you think could be introduced to do this?

16. In such situations the Board thinks it unfair that companies should have to bear the total costs when they have little control over the encroachment of developments. The underlying principle should be that where measures are required to counter an increase in societal risk, then any costs should be borne by those who increased the risk. If a site operator increases the level of their major hazard activities to the point where societal risk reduction is necessary, then it should pay for the risk reduction measures. But, if the risk is increased by housing development, then the developer should pay.
17. Application of this principle does, however, present obvious practical difficulties. For instance, process safety measures remain the legal responsibility of the operator. So sharing of costs will need to be a consideration but who would play the role of arbiter? And what happens when the developer feels the operator is taking the opportunity to introduce safety measures beyond what is strictly required? The situation becomes more complicated where there are two or more sites in close proximity, and the contribution that each site makes to the societal risk would have to be assessed. So the idea mooted of operators, developers and planning authorities getting together to consider the implications of an intended development before these issues arise seems eminently sensible.

Question 6. As well as site operators taking account of societal risk when considering on site control measures should societal risk be taken into account by planning authorities when making planning decisions?

18. Yes, the Board supports this approach, but notes that land use planning is a mitigatory measure based on a presumption of compliance with COMAH. This means there will be need to be different approaches adopted for COMAH enforcement than when giving advice on land use planning. For example should the maximum consented quantities of a hazardous substance be taken into account or should advice be based on existing inventories? There is also the problem about how to deal with the large number of sites where advice is given using the protection concept.
19. The Board also notes that planning authorities make the final decision on whether a development takes place based upon balancing HSE advice with other factors. The Board would encourage the development of guidance for planning authorities on how this balance should be achieved.

Question 7. Should HSE be consulted by planning authorities during the preparation of development plans so that information about societal risk could be considered at this stage?

20. Yes, the Board broadly supports the ideas in paragraphs 5.10-5.18. In particular, it notes the point in paragraph 5.15 about the relatively small number of planning authorities involved and supports the proposal to target them early on for societal risk assessments. It does however question, in relation to paragraph 5.18, whether it is right at this stage to rule out HSE becoming a statutory consultee for the development plans of the limited number of planning authorities where societal risk is potentially a serious issue.

Question 8. Do you think it would be appropriate for HSE to provide societal risk advice (in addition to the advice it provides currently) for individual development proposals around major hazard sites?

21. Yes. The Board presumes that this would be done selectively following the targeting referred to above. It is not clear from paragraphs 5.19-5.22 whether the PADHI system could be improved so that it registers the cumulative effect of serial planning decisions. There may be practical difficulties for planning authorities and developers if there is a societal risk threshold level beyond which no developments would be allowed. Could techniques be developed that registered small increases in societal risk?

Question 9. Do you think that societal risk should be taken into account when considering certain large developments outside the existing consultation zones for sites with specific hazards?

22. Yes, this seems sensible, since again it would presumably only arise with a limited number of planning authorities. If the issues raised by questions 7-9 relate to the same limited set of authorities, then the implications for HSE in providing societal risk advice should be more manageable.

Question 10. If HSE is to be consulted about societal risk for individual planning applications (see Q8) should consideration be given to framing it in a different way from that currently provided and based upon individual risk?

Question 11. If the answer to this is yes, what form might this advice take?

23. The Board finds it hard to answer these two questions on the basis of the information provided. It is obviously keen to see compatibility between the current system and any system that is overlaid to factor in societal risk issues, and would judge options accordingly.

HSE Consultation Document 211 on Land Use Planning

Buncefield Board response (first two sections only)

1. Introduction

1. The Board recognised at the outset of its work that Land Use Planning (LUP) was going to be one of the most complex and sensitive issues raised by the Buncefield incident. In the immediate aftermath of the explosion there were calls for a complete development moratorium in wide swathes around this and similar sites. While such a reaction was entirely understandable in the circumstances, the Board felt it was also necessary to consider the possible social and economic consequences of such a restriction, and to seek to strike an appropriate balance between the risks and benefits of development.
2. Once the broad sequence of events in the Buncefield incident became clearer (as set out in the Board's third progress report in May 2006), the Board took the view that a measured approach was needed. The likelihood of a similar explosion was low, and could be made lower still by a programme of actions designed to increase the reliability of primary containment. While not underestimating the effect of continuing uncertainty on local communities, particularly those directly affected by the Buncefield incident, the Board attached importance to reaching conclusions that are considered, costed and sustainable.
3. At the time of publishing its third progress report in May 2006 the Board asked HSE to review as a matter of urgency the basis and standard of the advice it provides to planning authorities. The Board appreciates HSE's response and the effort it has made in developing this Consultative Document.
4. The Board offered initial observations on these issues in paragraphs 80-86 of its Initial Report, published in July 2006, but did not think it sensible to go beyond this while HSE was conducting its review. In particular, the Board observed at paragraph 85 "We will be interested to know HSE's views on the desirability and feasibility of an approach to advise on developments around sites like Buncefield based more on consideration of risk. Under such an approach, the likelihood of major incidents, taking into account all the measures in place against them, would play a more explicit part than hitherto in determining planning advice."
5. In addition, at paragraph 86, the Board noted the incremental development around Buncefield and suggested that more attention should be paid to the total population at risk from a major hazard site. It therefore welcomed the cross-Government work on societal risk co-ordinated by the Cabinet Office. This work has resulted in the second Consultation Document, published on 2 April. The Board is considering a separate response to this but has taken account of its contents in what follows.

2. General Observations

6. Before dealing with the specific questions posed by the Consultation Document, it is appropriate to make some general observations to set the responses in context.
7. The Board has been approaching its work in an integrated way and sees LUP as underpinning a hierarchy of improvements as follows:
 - (a) Design and operation of sites to reduce inherent risks. This issue was addressed in the Board's fifth report published on 29 March;
 - (b) Emergency preparedness and response to mitigate the remaining risks. This is the subject of a report to be published in the near future; and
 - (c) LUP to be responsive to levels of risk that continue to be presented by each particular site.
8. With this in mind and given what the Board said in its Initial Report, it would like to see a LUP system that takes more account of the actual measures taken to achieve prevention and control to reduce the likelihood of loss of primary containment, so that LUP restrictions are targeted appropriately and are not unnecessarily severe. We had hoped to see some option(s) in which the consultation distance was based upon a quantification of the likelihood of hazardous occurrences on site leading to a major incident and resultant risk of harm to people, and not only related to the configuration and local circumstances of the Buncefield site.
9. Therefore, the Board feels that a fuller analysis of the quantified risk based options referred to in paragraph 8 is merited to promote a wider ranging discussion. It recognises that there are difficulties with this approach, for example in relation to human error, the assessment methodology to be used, and uncertainties related to data. However, the Board considers that a closer comparative analysis of the merits and limitations of the protection concept approach against the risk concept approach remains necessary to reach sound long term decisions on changes either to the planning system as a whole, or to the advice offered by HSE to planners within that system.
10. The Board also believes that the issues of LUP and Societal Risk (SR) are inextricably linked and would have preferred to see a single Consultative Document dealing with both issues in an integrated way. The current system seems to take account of SR up to a point, for instance in assigning sensitivity levels to zones, but does not tackle incremental development (see paragraph 5 above).
11. The system relating to major hazard sites is both complex and fragmented. It involves the granting of Hazardous Substance Consents, the setting of zones and consultation distances by HSE, and decisions about individual planning applications by the local authority, but without any overt linkage to the Safety Reports that top-tier sites are required to produce under COMAH. As is currently evident in Hemel Hempstead, it can cause particularly acute difficulties for local authorities where Consents exist but have not been used, or where operations have ceased and there is uncertainty about future intentions.

12. The Document only considers direct physical harm to people because HSE does not have the remit to incorporate other harms to communities, including those arising from the potential impact to property, livelihoods, amenities and the environment. The LUP system should have regard to the wider consequences resulting from the co-location of hazardous industrial sites with communities and/or sensitive environmental features, e.g. important aquifers.
13. A further point is the anomaly that major pipelines carrying gasoline are not subject to LUP controls. The Pipelines Safety Regulations, which came into force in 1996, currently include gasoline pipelines under the general duties applicable to all pipelines (covering design, construction and installation, operation, maintenance and decommissioning). However, gasoline pipelines are excluded from the additional duties for pipelines conveying fluids with a major accident hazard potential. There are therefore no requirements to produce an emergency plan and land use planning zones around gasoline pipelines, even though potential hazards are high.
14. In summary, the Board's general approach rests on the view that there is a need for a wider review of the whole system, embracing:
 - (a) an approach that brings about reductions in the likelihood of any major incident and ensures that the site operating standards and precautions are factored into the LUP decisions;
 - (b) a system that registers and responds to the cumulative effects of serial planning decisions other than by just expanding the zone distances; and
 - (c) an approach that effectively integrates into the planning system for major hazard sites the knowledge of site operators, the expertise of HSE and the judgement of planning officials.