A GUIDE TO RISK ASSESSMENT IN NORTHERN IRELAND

22/1/10

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Background and definitions

1 This Guide provides guidance for public service organisations in Northern Ireland on carrying out civil contingencies risk assessments. It supplements what is in 'The Northern Ireland Civil Contingencies Framework', and should be read in association with that document (see http://www.ofmdfmni.gov.uk/index/making-government-work/civil-contingencies.htm).

2 This guidance is based on the guidance issued to organisations in Great Britain to enable them to carry out risk assessments at national, regional, and local levels. Further information on this guidance can be found in Chapter 4 of the Cabinet Office document, 'Emergency Preparedness', available on http://www.cabinetoffice.gov.uk/sites/default/files/resources/ep_chap_04.pdf.

3 In this document, risk is defined as a product of the likelihood and impact of a given hazard or threat. Greater risks are associated with hazards or threats which have a higher impact and medium to high likelihood. Conversely, low risks will reflect hazards and threats where the impact is low and the likelihood is low to medium. The more difficult cases are those hazards and threats where the likelihood is low and the impact very high, or vice versa. These risks defy simple categorisation. They require a more sophisticated means of measurement involving judgements about the overall risk associated with certain combinations of likelihood and impact. Typically, these judgements are presented in a risk matrix, see **Figure 3**.

4 A **hazard** in the context of this guidance is:

"An accidental or naturally occurring (i.e., non-malicious) event or situation with the potential to cause death or physical or psychological harm, damage or losses to property, and/or disruption to the environment and/or to economic, social and political structures."

A **threat** is:

"The intent and capacity to cause loss of life or create adverse consequences to human welfare (including property and the supply of essential services and commodities), the environment or security."

THE RISK ASSESSMENT PROCESS

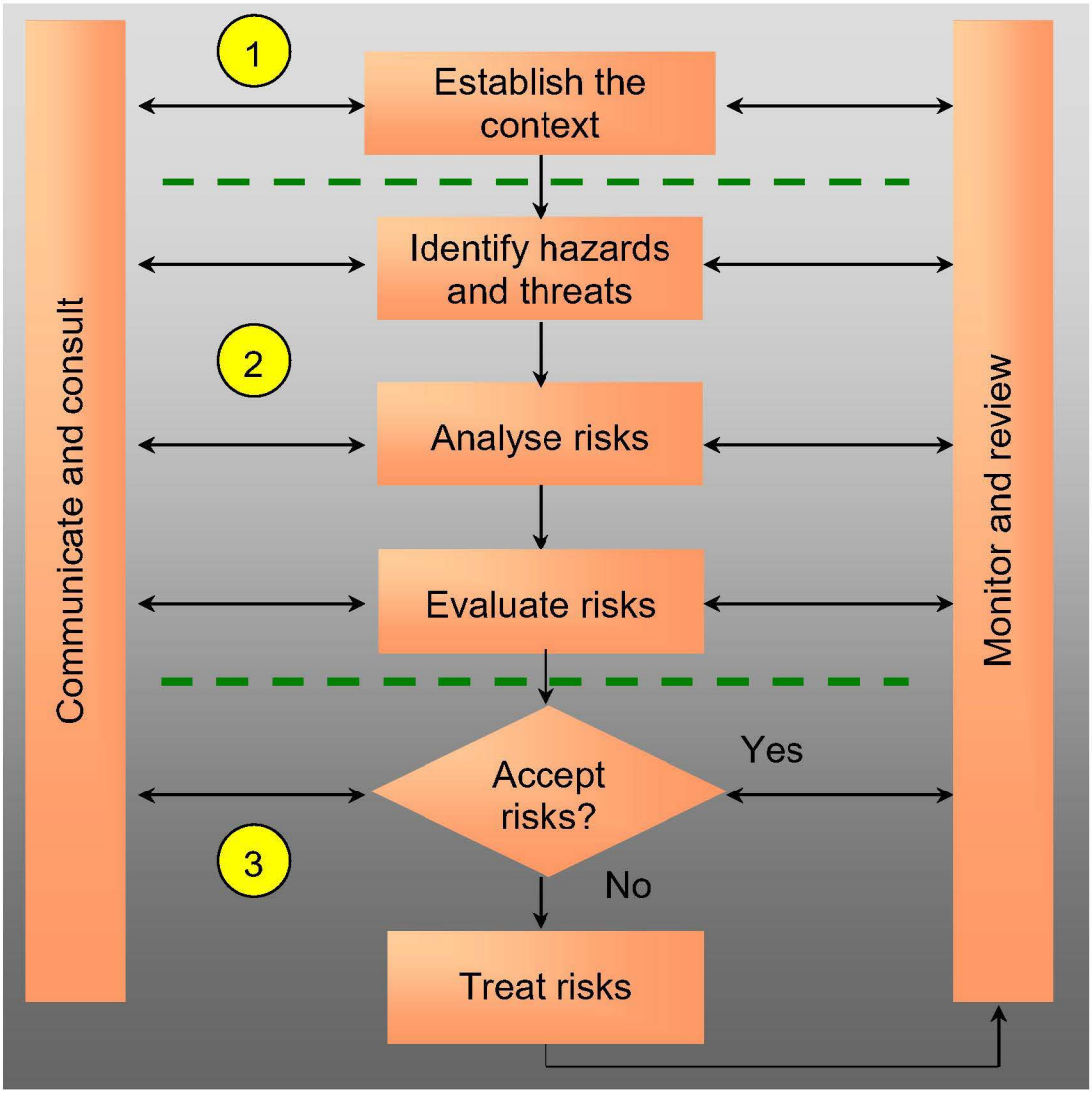
5 The 3 phase, 6 step, risk management process in this guidance document, and used in the rest of the UK, is consistent with the standard used in Australia and New Zealand, which is widely recognised as being good practice. Risk assessment is one component of the general risk management process as set out in Figure 1. The first phase is 'contextualisation', the second 'risk evaluation' and third 'risk treatment'. The six steps are summarised at Annex A to this document.

6 The 3 risk management phases can be described as follows:

1: Contextualisation. Involves defining the nature and scope of the risk problem and agreeing how the risk management process will be undertaken.

2: Risk evaluation. Covers the identification of those hazards and threats that present significant risks, analysis of their likelihood and impacts and the combination of these values to produce overall risk scores.

3: Risk treatment. Involves deciding which risks are unacceptably high, developing plans and strategies to mitigate these risks, and then testing the plans and any associated capabilities. Risk treatment may also involve other actions, such as the introduction of safety legislation or codes of practice, which fall outside the civil contingencies field, but which organisations should consider as part of their wider roles and responsibilities.



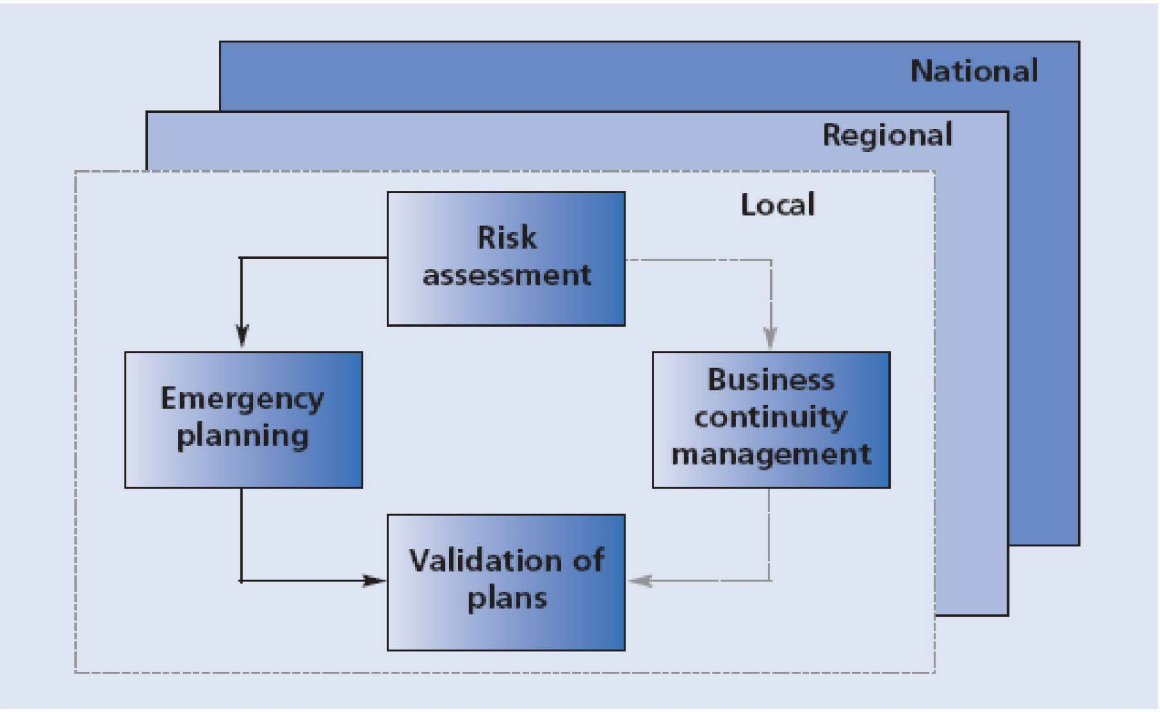
Source: Emergency Preparedness

Figure 1 The general risk management process

7 All three phases should be cyclical and interactive, involving the full range of stakeholders and allowing for review and updating. Moreover, the entire risk management process must be cyclical if it is to retain currency. Risks vary with changes in the context, changes in the hazards and threats, and changes in available emergency plans and capabilities. Thus, periodic reviews are required to ensure that these changes are captured then reflected in the risk assessment and emergency planning processes (see 'Monitoring and Reviewing').

Supporting the emergency planning process

8 As Figure 2 illustrates, risk assessment should drive a cyclical emergency planning process, informing emergency plans (and Business Continuity plans) which are then tested through audit and validation exercises. Regular updating of the risk assessment in turn leads to the revision of plans and further testing. A fundamental principle of emergency planning is to address common consequences rather than different causes. As far as possible, flexible coherent generic plans should be developed to deliver the response capabilities for managing consequences, whatever the hazard or threat which causes them. However, in order to ensure that these generic plans are commensurate with the risks, it is important that planning is underpinned by a risk assessment that evaluates and prioritises those hazards and threats according to their associated risks.



Source: Emergency Preparedness

Figure 2 The location of risk assessment in the emergency planning process

Rigour and Proportionality

9 The risk assessment process should be based on a sound methodology using the best available evidence and judgement. The process should involve all the relevant bodies, either as partners in a shared risk assessment process or as consultees. However, as far as possible the amount of effort given to any risk should be proportionate to its potential severity.

THE SIX-STEP PROCESS

Step 1: Contextualisation

10 There are two aspects to contextualisation. First, an organisation needs to set its own objectives and methodologies for the risk assessment exercise. Second, it needs to define the physical, social, environmental and statutory environment within which the risk exists.

11 An organisation should begin by defining the scope of the risk management activity in the context of its civil contingencies roles and responsibilities, existing civil contingencies arrangements and supporting guidance such as 'The Northern Ireland Civil Contingencies Framework' and 'A Guide to Emergency Planning Arrangements in Northern Ireland'. It should review the process that it will adopt and identify internal and external stakeholders. Internal stakeholders will include not only parts of an organisation which would have to make a direct response to an emergency, but also business areas which support the response, such as personnel and office services functions. Key external stakeholder groups may include the local emergency services, other public service organisations, utilities, voluntary organisations and groups in the community with a particular interest in emergencies. It is important that stakeholders understand the principles and criteria by which risks will be evaluated and prioritised. This should prepare them for later stages of the process in which they may contribute to decisions on which risks are acceptable, which must be tolerated, and which require to be managed.

12 The second aspect of Step 1 is for the organisation to describe the relevant characteristics of the area for which the risk assessment is being completed (whether Northern Ireland as a whole or a sub-regional or local area), as this will influence the likelihood and the impact of an emergency on the community. This is to better understand the context, as well as to establish the vulnerability and resilience of the area to emergencies. What aspects of the locality and community need be taken into account will depend on the functions of the organisation and its civil contingencies interests. An organisation may need consider some or all of the following aspects of its area, identifying emerging trends and possible future events, in addition to recording the current situation:

Social: What is the demographic, ethnic and socio-economic composition of the community? Are there any particularly vulnerable groups in the community? How are the various communities and vulnerable groups geographically distributed within the area? How experienced is the community at coping with different types of emergencies?

Health: What is the current health status of the community? Does it have any particular vulnerabilities in health terms (eg large population of elderly people)? What health facilities are available in the area, and would they be able to cope with the scale of event envisaged?

Environment: Are there any particular vulnerabilities (e.g. susceptibility to flooding, sensitive environments)? Is the area to be assessed urbanised, rural or mixed?

Infrastructure and economy: How is the infrastructure configured in the area (transport, utilities, business, etc.)? What are the critical supply networks in the area? Are there any sites in the area that are particularly critical for local, sub-regional, regional and national essential services (e.g. telecommunications hubs, regional medical facilities, head offices of large businesses etc.). What type of economy does it have?

Hazardous sites: What potentially hazardous sites exist in the area? Where are they in relation to communities or sensitive environmental sites?

Much of this information will already be in the public domain or available to public service organisations, for example census results, local and national surveys, yearbooks and maps.

Step 2: Hazard identification

Hazards

13 Taking into account the context described during Step 1, each organisation should identify those hazards that, in its view, present significant risks (i.e. could give rise to an emergency) over the next five years in functional areas for which they have lead responsibility. In order to ensure that there is consistency of hazard identification across Northern Ireland and within the UK as a whole, the standardised hazard lists issued by the Cabinet Office should be used as the basis of preparing risk assessments. However, individual organisations, or groups of organisations co-operating in risk assessments may wish to add other hazards which relate to specific areas or functions which are not already listed. These hazards will be identified on the basis of experience, research or other information and they are likely to present consequences to which a special mobilisation by the organisation is required.

14 When overall risk scores are calculated at a later stage, hazards that are low in likelihood but high in impact will score highly, implying a need for planning. It is important therefore to exclude at this stage hazards that are so low in likelihood that planning cannot be justified (e.g. asteroids hitting the earth), or so low in impact that if they occurred they could not constitute an emergency within the definition in Chapter 2 of 'The Northern Ireland Civil Contingencies Framework'. This is not to say that all low-likelihood, high-impact events or indeed all high-likelihood, low-impact events should be excluded, but a careful judgement is needed about the likelihood below which events will be excluded from the assessment. It would be good practice for organisations to maintain a record of excluded hazards and the reasons for doing so; this would allow them to demonstrate that certain risks were

considered at the outset but were then discounted for specified reasons (e.g. an assumption that the likelihood was so small that the hazard did not warrant further attention). Organisations should consult with other organisations with an interest in any particular hazard before discounting it, in case other organisations have information which suggests that the likelihood or impact would be greater than initially thought.

15 Any one hazard will usually involve more than one organisation and it would be a waste of resources for all involved organisations to carry out separate hazard identification processes. It is therefore important that organisations should share information and discuss hazards with other stakeholders.

Step 3: Risk analysis

Assessing the likelihood of hazards

16 For those hazards which appear on a central list, (for example the Regional Risk Assessment Guidance or the Local Risk Assessment Guidance) a UK likelihood assessment will be available to appropriate organisations. In addition, for sub-regional and local assessments in NI there will be a NI likelihood assessment for those hazards assessed at NI regional level. However, the relevance of the national or regional likelihood assessment to a particular geographical area or function in NI may vary. For example, the likelihood of an infectious disease epidemic in either animals or humans might not be expected to vary much over the UK as a whole, whereas the likelihood of coastal flooding is very dependant on the geography and hydrology of a particular area. Therefore although a national likelihood assessment forms a useful starting point for a NI regional, sub-regional or local likelihood assessment, organisations will have to make a judgement on whether to stick with the UK national assessment or to amend it. Likelihoods from the NI risk assessment would inform those for sub-regional and local assessments, especially where the NI likelihood differs from the UK level one. Some hazards will be able to be discounted altogether (for example coastal flooding in an inland area), and for others the likelihood assessment will need to be raised or lowered in response to local conditions. For those additional hazards which organisations identify, the likelihood assessment will need to be done from scratch.

17 Organisations should draft their assessments of the likelihood of the hazards occurring within the next five years (the same timescale adopted by the UK and GB assessments). When assessing the likelihood of a hazard it is necessary to refer to the description of an outcome of an incident. Without defining the outcome, it is more difficult to assess likelihood. For example, it is difficult to assess the likelihood of flooding in the next 5 years without defining the size of the flood incident to be assessed (small-scale floods are more likely than larger-scale floods). The outcome can be defined in various ways. For flooding, it may be appropriate to talk in terms of the area flooded. For many incidents it may be necessary to use numbers of fatalities. Although both measures – area flooded and fatalities – are consequences of the hazards, they are immediate or primary consequences that can be used as proxy measures to describe the outcome of the hazard.

18 The outcome of a hazard is not the same as its (wider) impact, which is considered later in the process, although there will usually be a close relationship between the

two. For example, in the case of flooding, two flood events could have the same primary outcome (for example 10 square miles flooded) but very different impacts, depending on the precise location of the flooding – flooding in rural areas will be different from flooding in urban areas. When considering outcome, attention needs to be paid to the definition of an emergency set out in Chapter 2 of 'The Northern Ireland Civil Contingencies Framework'. For the purposes for formal civil contingencies risk assessment, it is necessary only to consider outcomes of emergencies which meet the criteria set out in the definition of emergency. Organisations may, of course, carry out an analysis of smaller outcome events, as part of their ongoing business planning process.

19 Where there is a considerable range in the foreseeable outcomes of a potential hazard, it may be necessary to assess the likelihood (and subsequently impact) of the hazard at multiple outcomes. For example, it may be necessary to make separate risk assessments for different scales of flooding, different sizes of toxic chemical release or transport accidents with different numbers of casualties / fatalities. Assessing against two or more outcomes may be particularly necessary where different sizes of outcomes would pose different challenges, for example because of finite resources or additional complexities. However, it would probably not be an effective use of resources to assess against a wide variety of outcomes, so a pragmatic judgement needs to be made about the likelihood of different outcomes set against the need to ensure a high level of resilience. The Individual Risk Assessment form at Annex B allows the lead organisation to record multiple scales for each hazard. Annex C sets out the scoring scale to be used for likelihood, ranging from Low (1) to High (5). In practice the outcome descriptors in the regional and / or local risk assessment guidance issued by the Cabinet Office, and NI regional outcome descriptors should be used unless there is a specific reason not to.

20 The UK hazard likelihood assessment includes information on the outcome measures used to derive the likelihoods. As with the likelihood measures themselves, the national outcome measures may or may not be appropriate to Northern Ireland. For example, the outcome measures for chemical accidents may be similar across the country, but the appropriate outcome measures for flooding in Northern Ireland may be very different from national level ones due to differences in hydrology and population distribution. In considering casualty or fatality rates, the overall percentage of the population of Northern Ireland which is affected, for example by a disease epidemic, may be the same as for elsewhere in the UK, but the actual numbers would be much lower, because of Northern Ireland's small population (although smaller numbers will normally be offset in impact terms by fewer resources).

21 The likelihood of a hazard is usually best assessed by the lead organisation for that hazard, as it is likely to have most information on which to make the assessment. Where there are a number of stakeholders with an interest in assessing the likelihood for a particular hazard, or where lead responsibility is unclear, they may agree among themselves a lead organisation for the hazard assessment process (see 'A Guide to Emergency Planning Arrangements in Northern Ireland', http://www.ofmdfmni.gov.uk/index/making-government-work/civil-contingencies.htm for further information on lead organisations). The responsibilities of the lead organisation would be to:

- Assess the likelihood of the identified hazard(s), based on the generic likelihood assessment (where this is available), the cumulative knowledge of stakeholders, information from any other organisation in Northern Ireland which has already carried out a risk assessment for its area and any other relevant information.

- Liaise with NI or Whitehall government departments or agencies, as required.

- Document assessments using the Individual Risk Assessment Forms (Annex B)

- Present the likelihood assessment to the other stakeholder(s) and make changes as necessary.

- Ensure that the assessment is shared with all relevant organisations.

22 At local and sub-regional levels, the district council, or district council sub-regional group may co-ordinate multi-agency hazard assessment processes to establish locally or sub-regionally based hazard likelihoods. Other organisations should co-operate with the district councils on this.

23 The assessment should be carried out by people with appropriate expertise, possibly including experts from stakeholder organisations, with a pragmatic mix of evidence and judgement, both of which should be documented as far as possible. Training in generic hazard assessment techniques is also available from a range of sources, including the Emergency Planning College (http://epcollege.com/). Where appropriate, the assessments of likelihood will take account of any information available on the vulnerability (i.e. susceptibility to damage or harm) and resilience (ability to withstand damage or harm) of the relevant sites, systems and communities. **The assessments of likelihood should adopt the scales provided at Annex C.** These are the same scales as are used to produce the UK likelihood assessments.

24 The agreed likelihood assessments should be captured in the individual risk assessment forms (**Annex B**).

25 Training in the use of the GB risk assessment framework, which is closely related to this one, is available from the Cabinet Office Emergency Planning College, see http://epcollege.com/.

Assessing the likelihood of threats

26 Northern Ireland public service organisations will not normally be expected to assess types, outcomes and likelihood of threats. Generic threat statements and assumptions about the types and outcomes of threats will, where appropriate, be made available.

Assessing the impact of hazards

27 The next stage is to assess the impacts of the hazards, using the impact measures in Annex E. For local and sub-regional assessments, the potential impact of each hazard should be assessed in four different categories, health; social; economic and environment. Annex D describes the sort of impacts each category includes, gives measures of impacts ranging from 'Insignificant (1)' to 'Catastrophic (5)' and indicates how these should be used to derive a single overall impact score. The measures of impact can be only partly objective (eg total numbers of people injured or displaced, total amount of chemical released) as the impact depends not only on absolute numbers or amounts but also on the nature of the society or environment experiencing the hazard (as established at the 'contextualisation' stage). Organisations rating the severity of impacts should therefore be aware that they are using both objective measures and subjective judgements in making the impact assessment and make every effort to back it up with evidence (for example measures from a previous, similar, incident) and to record what assumptions have been made.

28 Subjective measures of impact should also include the likely impact of people's response to an incident. For example an accidental chemical release in a retail area such as a town centre or shopping complex may cause little physical damage, but if people perceive that there is a residual health risk from the chemical, or that the cause of the incident has not been adequately addressed, they may stay away and the economic effects would then be much greater than an objective measure of the direct impact would suggest.

29 A given hazard can have impacts across a wide range of public service sectors, for example the Foot and Mouth Disease outbreak in 2001 affected agriculture, tourism, the economy, social services, benefits, schools and sporting events. Therefore, while it would be appropriate for the likelihood of a hazard to be assessed by one or two organisations with specialist knowledge in the field, the assessment of the impact of a hazard may require input from a wide range of organisations. An impact assessment which is too narrow may seriously underestimate the effect of that impact and lead to underestimation of the risk and wrong decisions on the priority for risk treatment. In addition, it may seriously affect the effectiveness of plans based on the risk assessment.

30 The development of an impact assessment would normally be led by the lead organisation, but that organisation should ensure that it has consulted fully on impacts. This consultation may be done bi-laterally between interested organisations, by using existing liaison group arrangements, by forming ad hoc working groups or, where appropriate, at meetings of the NI Risk Assessment Sub-group or any sub-regional or local inter-agency groups organised by district councils. Where there is no agreed lead organisation, any of the organisations with a potential involvement may initiate the process. Other stakeholders will be expected to contribute fully to a joint hazard identification process. At sub-regional and local levels, district councils may take a lead in preparing an integrated assessment of the outcomes of hazards, and other organisations should co-operate with, and contribute to, this work. Belfast has its own arrangements through the Belfast Resilience project.

31 However the consultation is carried out, the task is to assess the impacts of the hazards using the scales provided at Annex D.

32 The results of the impact assessment should be reflected in the individual risk assessment forms.

Step 4: Risk Evaluation

33 Risk assessments are produced by combining the assessed likelihood and impact scores of a hazard or threat by plotting them on a risk matrix. The matrix shown in Figure 3 is a more sophisticated version of that at Figure 5.1 of 'The Northern Ireland Civil Contingencies Framework' and it is being used in GB at national, regional and local levels. Organisations will also be familiar with this type of matrix from their business risk management processes. The production of a risk matrix is an essential part of the risk assessment process. Not only does it enable the risk analysis to be interpreted against pre-defined criteria, but it greatly facilitates the communication of the risk assessment. Annex E provides descriptions of the four risk ratings ('Very High', 'High', 'Medium' and 'Low') and addresses their relative significance for directing emergency planning.

34 The formula used to combine likelihood and impact scores varies from one risk assessment approach to another. The guidance presented here is consistent with a number of the major standards and consistency in the application of this risk matrix is essential if the results of the local risk assessments are to be easily compared.

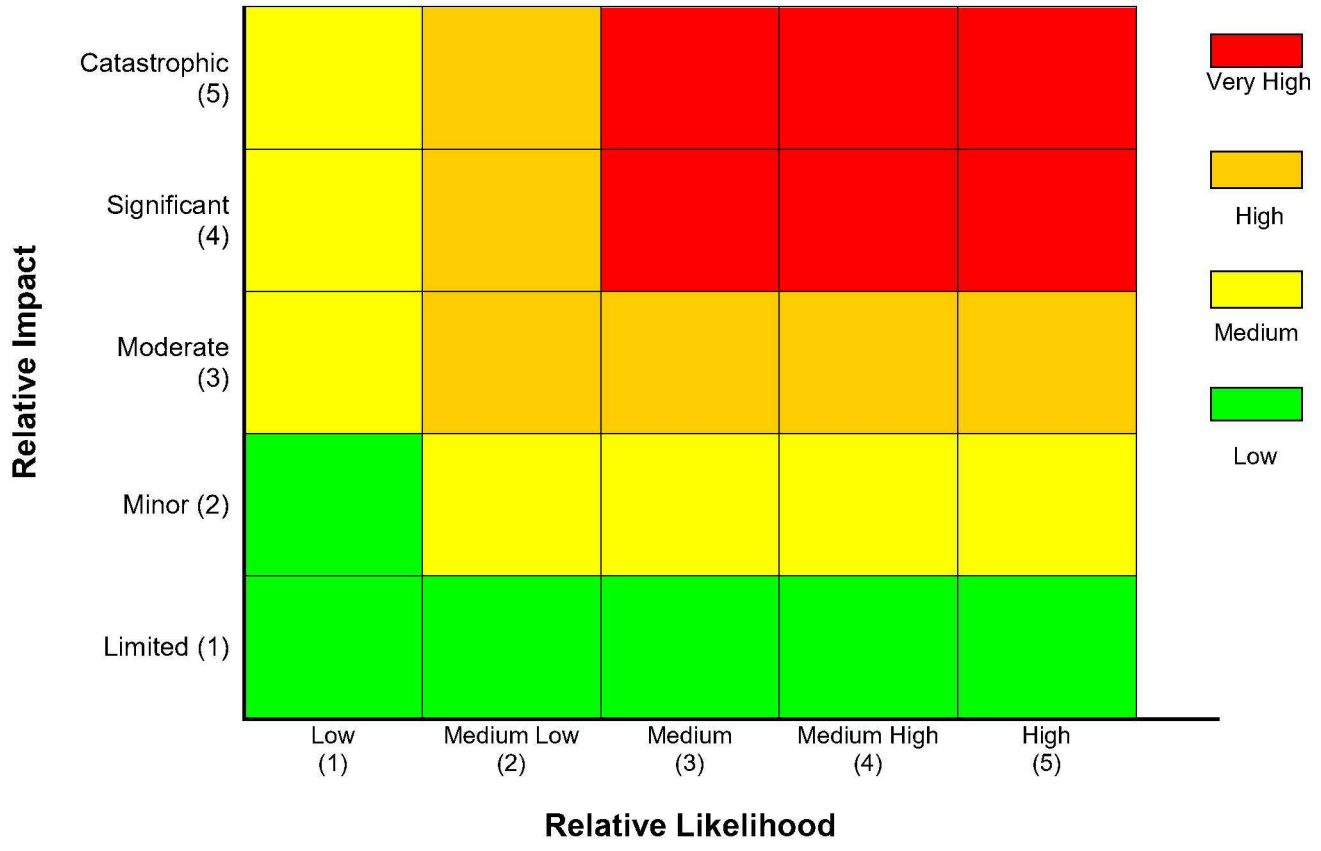


Figure 3: Risk Matrix

35 The risk evaluation process will normally be carried out by the lead organisation, where necessary involving other stakeholders by using the consultation methods which have been developed for hazard identification and impact assessments. Each organisation should have its own risk matrix for the risks for which it has lead responsibility. It should be willing to share information on the risk evaluation with other stakeholders, and where more than one organisation has a high level of interest in the hazard in question they should agree a common risk assessment and place it on the risk matrix of each interested organisation.

36 Where a district council or sub-regional district council group is co-ordinating a risk assessment process, it may be possible to produce a sub-regional or local risk matrix by combining the full range of risk assessments from all lead organisations at that level.

Step 5: Risk treatment

37 Risk assessments are not an end in themselves, but serve as a means for ensuring a reasonably objective starting point for organisations in their approach to Integrated Emergency Management. Assessments allow organisations to prioritise their civil contingencies activities on an objective basis and to measure the effectives of their actions in reducing risk or making response plans. Therefore at the risk treatment stage of the process, organisations should prioritise their own risk reduction measures in accordance with the size of the risks and the gaps in the capabilities required to respond to those risks. It would be useful for the purposes of comparing priorities between organisations if risk priority was expressed on a 1-5 scale with 1 as the lowest priority and 5 as the highest risk priority.

38 Once priorities have been agreed (either within the organisation or between contributing organisations where more than one has a significant interest) the next step is to identify and evaluate treatment options for each risk (e.g. exercises, plans, public information) and agree a risk treatment plan. Risk treatment is not just a function of the lead organisation. All organisations that contributed to the likelihood assessment and/or the impact assessment should consider what measures they can take to treat the impacts which fall within their areas of responsibility. In considering priorities, an organisation will need to take account not only of the risks for which it has lead responsibility but also those which would have significant impact on it, its services or its policy sector. Using a standardised method and scoring on a standardised matrix as above allows different organisations to compare their priorities on a like-for-like basis. In some cases an organisation may be able to make a bigger overall contribution to the safety of a community or environment by co-operating with another organisation to manage one of its high or very high risks than by treating a low risk for which it has lead responsibility.

39 The process of risk treatment has a number of stages that are described below. The results of each stage should be recorded.

- Assess, using the outcome measures and the assessed impacts, the type and extent of the capabilities (equipment, trained staff, facilities, plans) required to manage and respond to the hazards and threats.

- Identify the capabilities that are already in place.

- Considering the gap and the size of the risk, rate the risk priority.

- Identify the additional treatments required to close the capability gap and manage the risk more effectively.

- Identify what other organisations may need to contribute to or provide the treatment, and liaise with them on a co-ordinated programme, for example joint planning training and exercises, to make best use of available resources.

- The prioritisation of risk reduction / treatment measures for threats follows a similar process as for hazards, except that there will not be a likelihood or impact measure. Nevertheless, a risk priority should be attributed to the treatment required to deal with capability gaps between the outcomes in any generic threat statements which are made available and existing resources.

Step 6. Monitoring and reviewing

40 Risks and risk treatment programmes should be reviewed regularly:

a. when there has been a change in the environment eg new facilities or capabilities,

b. In response to experience of an incident either in NI or elsewhere. Questions to ask include "Could it happen here?" "Are our assumptions still valid?" and "Were there any impacts which were not taken into account in our risk assessment?" or

c. as part of a regular review cycle (GB organisations will be working on a four year cycle).

The risk assessment should be seen as a living document and should be referred to regularly and updated when required.

Publishing risk assessments

41 Organisations will need to consider to what extent it is advisable to publicise their risk assessments. Making risk assessments public enables the public to take informed decisions on what risk they are prepared to accept and to make personal preparations for emergencies. An example of this is where the Rivers Agency in NI has published a strategic flood map for NI rivers and sea which enables home owners to be aware that they need to pay attention to flood warnings and have arrangements to ensure the safety of their family and possessions should flooding occur and response organisations to prioritise where to focus their prevention and planning activities. On the other hand, some risk assessments may be sensitive, for example, they may have been developed using commercially sensitive information. Organisations need to consider the security classification of the information which they hold and the restrictions on the disclosure of sensitive information. Information

on the principles of effective risk communication is available via the UK resilience website (http://www.cabinetoffice.gov.uk/content/risk-assessment).

42 It is good practice when placing aspects of risk assessments in the public domain to do this in a way which integrates such information with information on what the organisation, or group of organisations, is doing to manage the risk and prepare contingency plans and what members of the public can do to co-operate with the organisation and to add to their own personal safety. Where particular risk would have impacts across a range of functions it is preferable if information published is co-ordinated across organisations so that the public is able easily to get a complete picture of the steps being taken to manage the risks and make contingency plans. Publishing risk information on a website allows it to be easily updated and amended as risk assessments are refined and as risk management measures change the assessment. If an organisation plans to publish any risk information which includes, makes mention of, or is based on, risk category, likelihood or impact information issued by the Cabinet Office Civil Contingencies Secretariat (CCS), the permission of the CCS should be sought in advance. Civil Contingencies Policy Branch in the Office of the First Minister and Deputy First Minister can provide contact information if required.

43 Members of the public may make requests under the Freedom of Information (FOI) Act to see risk assessments. Individual organisations which are presented with such requests are responsible for dealing with it and will need to consider what can be released in consultation with their own information management units and (for NI departments) the Information Management and Central Advisory Branch in OFMDFM. The exemptions relating to national security and commercial sensitivity may be particularly relevant to these deliberations. Given the relatively short timeframe in which information must be provided, it would be helpful for organisations to consider in advance how such requests would be handled. **Requests under the Freedom of Information Act to see UK national hazard or threat assessments, or any Northern Ireland assessments which draw on national information, should always be referred to the Cabinet Office.** Civil Contingencies Policy Branch in the Office of the First Minister and Deputy First Minister can provide contact information if required.

Further information

44 Terminology used in risk assessment is notoriously varied. The wording used in this guidance aims to be consistent with the main standards relating to civil contingencies risk assessment in the rest of the UK. A glossary of risk assessment terminology is at **Annex F**.

45 Further information on risk assessment can be found in the links in **Annex G**, 'Risk Management Documents and Websites'.

Summary of the SIX STEP Local Risk Assessment Process

STEP NO.	NAME OF STEP	AGENCIES INVOLVED	ACTIONS	INPUTS
1	Contextualisation	Relevant lead organisations and other organisations likely to have an interest.	- Set scope of project (relate to definition of emergency in the NI Civil Contingencies Framework). - Set out risk evaluation criteria & principles. - Review or describe social, economic, cultural, infrastructural and environment issues within local context.	- Individual organisations bring views on local characteristics etc.
2	Hazard identification	Lead organisations.	- Each lead organisation provisionally identifies & describes hazards in its policy area likely to give rise to an emergency, and shares this information with other organisations likely to have an interest. - Lead organisation takes decision on how to take forward risk assessment, eg whether to establish a Risk Assessment Working Group.	- Other organisations likely to be involved in the emergency or the response to contribute information and research on relevant hazards. - UK level hazard and threat categories may be available.
3	Risk Analysis	Lead organisations and all stakeholders.	- Lead organisation assesses the likelihood of the hazards over 5 year period, drawing on any national assessments which are available and the local knowledge available within the organisation and partner organisations. - Lead organisation assesses the impact of the hazards, in consultation with a full	- Some GB or UK-wide generic hazard likelihood assessments and threat statements may be available. - local knowledge of other organisations, including utilities.

			range of stakeholders. - Details of the assessment and reasoning are captured in the individual risk assessment form (Annex B).	- Research and analysis of historical data.
4	Risk Evaluation	Lead organisations.	- Lead organisation considers the individual risk assessment form for each hazard, confirms what level (1-5) the likelihood and impact measures are using the set criteria in Annexes C and D, and plots the position of the risk on the 5x5 matrix. - Lead organisation shares outcome of risk assessment with all stakeholders - Any threat statement provided is considered. - Existing capabilities and mitigation plans for the hazards and threats are identified. - Options for treatment are identified and evaluated (accept/transfer/avoid/reduce/prevent/ mitigate).	- Individual risk assessment forms. - Risk evaluation criteria in Annexes C and D. - 5x5 risk matrix weighted as in Annex E. - Existing plans, arrangements, resources, expertise etc.
5	Risk Treatment	Lead organisations and all other stakeholders.	- Assess the capability challenges presented by the risks. - Review current capabilities and mitigation plans. - Assess the gaps in response capabilities. - Identify additional treatment measures which could be taken. - Prioritise treatment measures on basis of risks and gaps. - Identify person or organisation to be responsible for implementing each	- Risk assessments for all the risks in which each organisation has an interest. - Assessments of current capabilities.

			measure.	
6	Monitoring and reviewing	Lead organisations, involving others as appropriate.	- Formal review of all risks on 4 year cycle. - Ad hoc review as and when new information suggests the need.	- On-going review of changes to context and hazards within responding organisations. - Ongoing and regular reviews of risks by lead organisation and others.

Annex B

BLANK INDIVIDUAL RISK ASSESSMENT

Hazard Category	
Sub Category	
Description	
Reference No	
Lead Dept UK / NI Equivalent	
Date of Revision	
Next Review date	

1. Overview of Hazard

2. Key Historical Evidence

3. Likelihood		
Hazard	Outcome description	Likelihood

4a. Impact		
Hazard	**Outcome Description**	**Impact**
		Economic:
		Fatalities:
		Casualties:
		Social:
		Outrage:
		Anxiety:
		Overall:
		Average:

4b. Details
Impacts associated with:
Primary:
Secondary:

5. Vulnerability & Resilience

Annex B

6. Overall Assessment			
Category	Sub Category		
Scale	Impact	Likelihood	Risk
Controls In Place:			

Contact Name	Contact Details

Annex C

LIKELIHOOD SCORING SCALE

Level	Descriptor	Likelihood over 5 years	Likelihood over 5 years
0	This risk is not	relevant to the region	in question
1	**Low**	>0.005%	>1 in 20,000 chance
2	**Medium Low**	>0.05%	>1 in 2,000 chance
3	**Medium**	>0.5%	>1 in 200 chance
4	**Medium High**	>5%	>1 in 20 chance
5	**High**	>50%	>1 in 2 chance

Annex D

IMPACT SCORING SCALE – QUALITATIVE MEASURES

Level	Descriptor	Categories of Impact (see below)	Description of Impact
1	Insignificant	Health	• Insignificant number of injuries or impact on health
		Social	• Insignificant number of persons displaced and insignificant personal support required. • Insignificant disruption to community services, including transport services and infrastructure.
		Economic	• Insignificant impact on local economy.
		Environment	• Insignificant impact on environment
2	Minor	Health	• Small number of people affected, no fatalities, and small number of minor injuries with first aid treatment.
		Social	• Minor damage to properties. • Minor displacement of a small number of people for < 24 hours and minor personal support required. • Minor localized disruption to community services or infrastructure <24hours
		Economic	• Negligible impact on local economy and cost easily absorbed.

Level	Descriptor	Categories of Impact (see below)	Description of Impact
		Environment	• Minor impact on environment with no lasting effects.
3	Moderate	Health	• Moderate number of fatalities with some casualties requiring hospitalization and medical treatment and activation of major incident procedures in one or more hospitals.
		Social	• Damage that is confined to a specific location, or a number of locations, but requires additional resources. • Localised displacement of >100 people for 1-3 days. • Localised disruption to infrastructure and community services.
		Economic	• Limited impact on local economy with some short-term loss of production, with possible additional clean-up costs.
		Environment	• Limited impact on environment with short-term or long-term effects.
4	Significant	Health	• Significant number of people in affected area impacted with multiple fatalities, multiple serious or extensive injuries, significant hospitalization and activation of major incident procedures across a number of hospitals.

Level	Descriptor	Categories of Impact (see below)	Description of Impact
		Social	• Significant damage that requires support for local responders with external resources. • 100 to 500 people in danger and displaced for longer than one week. Local responders require external resources to deliver personal support. • Significant impact on and possible breakdown of delivery of some community services.
		Economic	• Significant impact on local economy with medium-term loss of production. • Significant extra clean-up and recovery costs.
		Environment	• Significant impact on environment with medium-to long-term effects
5	Catastrophic	Health	• Very large numbers of people in affected area(s) impacted with significant numbers of fatalities, large numbers of people requiring hospitalization with serious injuries with longer-term effects.

Level	Descriptor	Categories of Impact (see below)	Description of Impact
		Social	• Extensive damage to properties and built environment in affected area requiring major demolition. • General and widespread displacement of more than 500 people for prolonged duration and extensive personal support required. • Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support.
		Economic	• Serious impact on local and regional economy with some long-term, potentially permanent, loss of production with some structural change. • Extensive clean-up and recovery costs.
		Environment	• Serious long-term impact on environment and/or permanent damage.

Explanation of Categories of Impact

Category	Explanation
Health	Encompassing direct health impacts (numbers of people affected, fatalities, injuries, human illness or injury, health damage) and indirect health impacts that arise because of strain on the health service.
Social	Encompassing the social consequences of an event, including availability of social welfare provision; disruption of facilities for transport; damage to property; disruption of a supply of money, food, water, energy or fuel; disruption of an electronic or other system of communication; homelessness, evacuation

	and avoidance behaviour; and public disorder due to anger, fear and/or lack of trust in the authorities.
Economic	Encompassing the net economic cost, including both direct (eg loss of goods, buildings, infrastructure) and indirect (eg loss of business, increased demand for public services) costs.
Environment	Encompassing contamination or pollution of land, water or air with harmful biological / chemical / radioactive matter or oil, flooding, or disruption or destruction of plan or animal life.

Notes

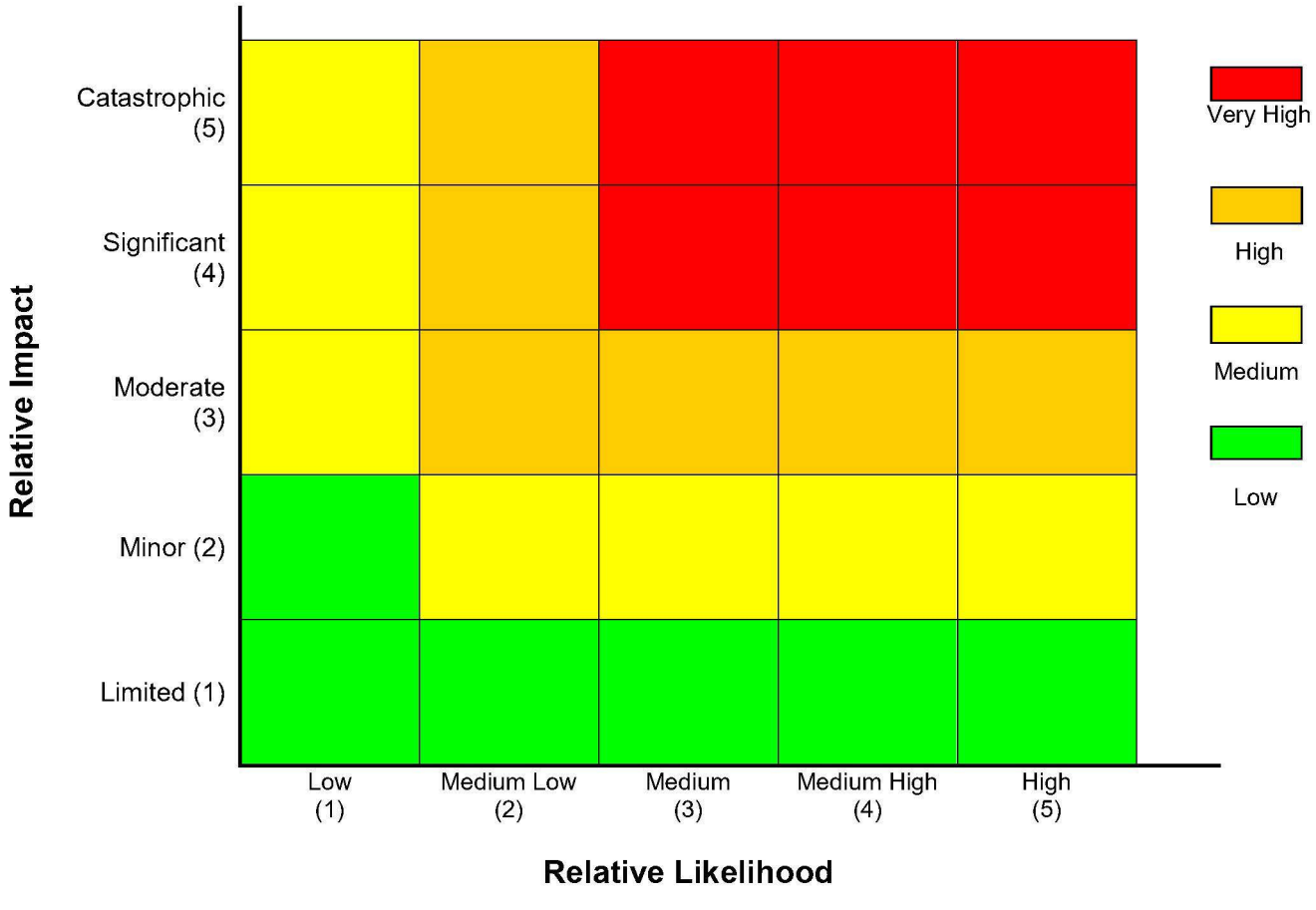
Levels 1 and 2 of the impact scale above are likely to fall below the threshold for an emergency, ie would not fall within the definition of emergency given in 'The Northern Ireland Civil Contingencies Framework'. Therefore it may be unnecessary to plan for events that score 1 or two on the impact scale unless there are additional factors to take into consideration, such as matters of social sensitivity, environmental impacts on particularly rare or sensitive habitats or interaction with other hazards. However, if the risk assessment indicates that level 1 or 2 impact incidents are likely to occur with a high likelihood, an organisation may need to assess its day to day processes and resources to ensure that they are adequate to cope with the expected impacts.

Most hazards will score differently for the four different categories. For example, an oil spill into a river could score low on health effects, moderate on social and economic effects and high on environmental effects. For each given hazard the score which should be used for inputting to the risk matrix should be derived as follows:

Step 1: For the risk being assessed, take the average of the four impact scores.

Step2: To arrive at the final aggregate impact score, apply commonsense / expert judgement – typically, in rounding up or rounding down to a whole number.

RISK RATING MATRIX



Definitions of Risk Ratings

- **Very High (VH) Risk** – these are classed as primary or critical risks requiring immediate attention. They may have a high or low likelihood of occurrence, but their potential consequences are such that they must be treated as a high priority. This may mean that strategies should be developed to reduce or eliminate the risks, but also that mitigation in the form of (multi-agency) planning, exercising and training for these hazards should be put in place and the risk monitored on a regular frequency. Consideration should be given to planning being *specific* to the risk rather than generic.

- **High (H) Risk** – these risks are classed as significant. They may have high or low likelihood of occurrence, but their potential consequences are sufficiently serious to warrant appropriate consideration after those risks classed as 'very high'. Consideration should be given to the development of strategies to reduce or eliminate the risks, but also that mitigation in the form of at least (multi-agency) generic planning, exercising and training should be put in place and the risk monitored on a regular frequency.

- **Medium (M) Risk** – these risks are less significant, but may cause upset and inconvenience in the short-term. These risks should be monitored to ensure that they are being appropriately managed and consideration given to their being managed under generic emergency planning arrangements.

- **Low (L) Risk** – these risks are both unlikely to occur and not significant in their impact. They should be managed using normal or generic planning arrangements and require minimal monitoring and control unless subsequent risk assessments show a substantial change, prompting a move to another risk category.

Risk Management Glossary

Capability	A demonstrable capacity to respond to and recover from a particular threat or hazard. Originally a military term, it includes personnel, equipment, training, and such matters as plans, doctrine and the concept of operations.
Capability gap	The gap between the current ability to provide a response and the actual response assessed to be required for a given threat and hazard. Plans should be made to reduce or eliminate this gap, if the risk justifies it.
Consequences	Impact resulting from the occurrence of a particular hazard or threat, measured in terms of the numbers of lives lost, people injured, the scale of damage to property and the disruption to essential services and commodities.
Damage	Physical destruction, corruption of information, or loss of beneficial social phenomena (e.g. trust or affiliation).
Generic plan	A single plan designed to cope with a wide range of emergencies.
Hazard	Accidental or naturally occurring (i.e., non-malicious) event or situation with the potential to cause death or physical or psychological harm, damage or losses to property, and/or disruption to the environment and/or to economic, social and political structures.
Hazard assessment	A component of the risk assessment process in which identified hazards are assessed for future action.
Hazard identification	A process by which potential hazards are identified.
Impact	The scale of the consequences of a hazard or threat expressed in terms of a reduction in human welfare, damage to the environment and loss of security.
Planning assumptions	Descriptions of the types and scales of consequences for which organisations should be prepared to respond. These will be informed by the risk assessment process.
Resilience	The ability of the community, services, area or infrastructure to withstand the consequences of an incident.

Risk	Risk measures the significance of a potential event in terms of likelihood and impact. In the context of the Civil Contingencies Act, the events in question are emergencies.
Risk Assessment	A structured and auditable process of identifying potentially significant events, assessing their likelihood and impacts, and then combining these to provide an overall assessment of risk, as a basis for further decisions and action.
Risk management	The culture, processes and structures that are directed towards the effective management of risks.
Risk rating matrix	Matrix of impact and likelihood for an event, to ascertain the risk.
Risk treatment	A systematic process of deciding which risks can be eliminated or reduced by remedial action and which must be tolerated.
Specific plan	A plan designed to cope with a specific type of emergency, where the generic plan is likely to be insufficient.
Threat	The intent and capacity to cause loss of life or create adverse consequences to human welfare (including property and the supply of essential services and commodities), the environment or security.
Threat assessment	A component of the risk assessment process in which identified threats are assessed for future action.
Vulnerability	The susceptibility of a community, services or infrastructure to damage or harm by a realised hazard or threat.

RISK MANAGEMENT DOCUMENTS AND WEBSITES

The Northern Ireland Civil Contingencies Framework. Civil Contingencies Policy Branch, Northern Ireland. Available through http://www.ofmdfmni.gov.uk/index/making-government-work/civil-contingencies.htm

A Guide to Emergency Planning Arrangements in Northern Ireland. Civil Contingencies Policy Branch, Northern Ireland. Available through http://www.ofmdfmni.gov.uk/index/making-government-work/civil-contingencies.htm

Preparing for Emergencies. CCS publication available on http://www.cabinetoffice.gov.uk/resource-library/emergency-preparedness

Communicating Risk. HM Treasury / Government Information. Available on http://www.hm-treasury.gov.uk/psr_governance_risk_usefullinks.htm http://www.cabinetoffice.gov.uk/content/risk-assessment.

The Orange Book: Management of Risk- Principles and Concepts (Revised Edition), 2004. HMT. Available through http://www.hm-treasury.gov.uk/orange_book.htm

Risk Assessment and Risk Management. Interdepartmental Liaison Group for Risk Assessment (ILGRA), 1998. Available through http://www.hse.gov.uk/aboutus/meetings/committees/ilgra/index.htm

Supporting Innovation: Managing Risks in Government Departments National Audit Office, The Stationary Office, 2000 (ISBN 0 10556 948 8). http://www.nao.org.uk/publications/nao_reports/9900864es.pdf. Other National Audit Office information available on www.nao.org.uk.

Risk: Improving Government's Capability to Handle Risk and Uncertainty – Summary Report. The Strategy Unit, 2002 Available on http://tna.europarchive.org/20070205125638/http://www.cabinetoffice.gov.uk/strategy/downloads/su/risk/report/downloads/su-risk.pdf

A Risk Management Standard. Association of Insurance and Risk Managers (AIRMAC), Association of Local Authority Risk Managers (ALARM), Institute of Risk Management (IRM) 2002. Available on www.theirm.org/publications/documents/Risk_Management_Standard_030820.pdf

Emergency Planning College website, http://epcollege.com/. Includes information on courses in risk assessment using a version of the format set out in this Chapter.