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Appendix 16A

Major Accidents and Disasters Harm Criteria

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1. Appendix 16A Major Accidents and Disasters Harm Criteria

1.1 Introduction

1.1.1 The Major Accidents and Disasters assessment examines effects resulting from unplanned but reasonably foreseeable events of high magnitude. They are unlikely to occur during the life of a development; however, should they occur, the consequences are so serious that their scrutiny during the planning process is warranted to ensure that a development is not unduly vulnerable to them.

1.1.2 Criteria for the severity of harm, duration of harm and number of people affected are outlined in **Table 16A 1.1**, **Table 16A 1.2** and **Table 16A 1.3** respectively.

Receptor Sensitivity

1.1.3 Receptor sensitivity, which relates to the intrinsic value and/or sensitivity of receptors, is embedded within the 'severity of harm', 'duration of harm' and 'number of people affected' criteria to establish their threshold levels and scaling factors. For this reason, as receptor sensitivity is embedded within the harm criteria, it is not explicitly considered as an additional criterion in the Major Accidents and Disasters assessment.

Non-human receptors

1.1.4 The environmental (non-human) criteria have been directly extracted from the Chemical and Downstream Oil Industries Forum (CDOIF) guidance[1] which sets a maximum or minimum severity ranking for some receptors. Where severity of harm categories do not apply to certain receptors, these are noted as not applicable (N/A) in the table.

1.1.5 Where two threshold parameters are given within a single category, the lesser of the two is taken to be the threshold for a given receptor.

[1] Chemical and Downstream Oil Industries Forum (2016). Guideline – Environmental risk tolerability for COMAH establishments. (Online) Available at: https://www.sepa.org.uk/media/219154/cdoif_guideline__environmental_risk_assessment_v2.pdf (sepa.org.uk) (Accessed August 2024).

Population and human health

1.1.6 These criteria are aligned to and largely extracted from definitions used in commonly applied major hazard guidance for the environment and risk tolerability criteria for people applied by the Health and Safety Executive.[2] The descriptions for population and human health severity criteria in **Table 16A 1.1** have been further developed to include wider health, social and economic effects drawn from the Civil Contingencies guidance.[3]

Differences between CDOIF and EIA

1.1.7 In **Table 16A 1.1**, the term 'not significant' is used to refer to a level of harm that might lead to noticeable pollution or a minor impact on people, but one which is not considered to reach the thresholds of a Major Accident. In the CDOIF guidance, this category is called 'significant' (rather than 'not significant'). It has been renamed to 'not significant' here to avoid confusion since significant has a different meaning within the Environmental Impact Assessment (EIA) context.

1.1.8 In line with the CDOIF[1] and Department of the Environment, Transport and the Regions (DETR) guidance[4], destruction of Grade II listed buildings, or Grade II registered parks and gardens, are not considered to be a major accident.

1.1.9 However, if the incident which led to their destruction could endanger human life, or a relevant population of particular species, then it would be considered as a major accident under the appropriate receptor. Damage to Grade II assets is not considered to be 'wholly exceptional' under the National Planning Policy Framework (Para 206b)[5].

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2 Health and Safety Executive (2001). Reducing Risks Protecting People (R2P2) (online). Available at: https://www.hse.gov.uk/enforce/assets/docs/r2p2.pdf (Accessed August 2024).

3 Cabinet Office, 2012, Chapter 4 Local Responder Risk Assessment Duty, (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/61027/Chapter-4-Local_20Responder-Risk-assessment-duty-revised-March.pdf (Accessed August 2024).

4 Department of the Environment, Transport and the Regions (1999). Guidance on the Interpretation of Major Accidents to the environment for the purposes of COMAH Regulations. (Online) Available at: https://www.sepa.org.uk/media/219153/detr-guidance-1999.pdf (Accessed August 2024).

5 Ministry of Housing, Communities, and Local Government (2023). National Planning Policy Framework. (Online), Available at: https://assets.publishing.service.gov.uk/media/669a25e9a3c2a28abb50d2b4/NPPF_December_2023.pdf (Accessed August 2024).

Table 16A 1.1 Major Accidents and Disasters severity of harm criteria

Reactor Type	Severity of Harm			
	Not Significant	**Severe**	**Large**	**Very Large**
Human populations (public)	Small number of minor injuries	Substantial number of people requiring medical attention. Events of this magnitude may also involve some damage to housing, with low numbers of people being displaced. Potential for localised interruption to utilities and damage to infrastructure.	Multiple life changing injuries and/or potential loss of life in low numbers Events of this magnitude are also likely to involve significant community impact such as: • Many people requiring medical treatment. • Many people suffering long term mental health issues related to the event. • Housing and business premises rendered uninhabitable with many people displaced for significant periods. • Significant adverse medium-term economic effects locally. • Significant clean-up and recovery costs.	Potential loss of life in high numbers and/or substantial number of life changing injuries. Events of this magnitude are also likely to involve significant community impact such as: • Very many people requiring medical treatment. • Widespread mental health issues related to the event. • Large areas of housing and business premises rendered uninhabitable with large numbers of people displaced for extended periods. • Extensive adverse long- term economic effects regionally and nationally. • Extensive clean-up and recovery costs. • Potential for disruption to regional infrastructure, utilities and services.

Reactor Type	Severity of Harm			
	Not Significant	**Severe**	**Large**	**Very Large**
			• Potential for disruption to regional infrastructure, utilities and services. • Incident requiring emergency response at County/Regional scale.	• Incident requiring emergency response at National/ International scale.
Human populations (workers)	Substantial number of people requiring medical attention	Multiple life changing injuries	Multiple life changing injuries, potential loss of life in low numbers. Events of this magnitude are also likely to involve: • Many people suffering long term mental health issues related to the event. • Significant adverse medium-term effects to local economy. • Significant clean-up and recovery costs to the local community. • Potential for disruption to regional	Potential loss of life in high numbers and substantial numbers of life changing injuries. Events of this magnitude are also likely to involve: • Widespread mental health issues related to the event. • Extensive adverse long- term economic effects regionally and nationally. • Extensive clean-up and recovery costs to society. • Potential for disruption to regional infrastructure, utilities and services. • Incident requiring emergency response at National/International scale.

Reactor Type	Severity of Harm			
	Not Significant	**Severe**	**Large**	**Very Large**
			infrastructure, utilities and services. • Incident requiring emergency response at County/Regional scale.	
Designated land/water sites (internationally important)[6]	<0.5 hectares (ha) of site area or <5% (<5% linear feature or population) adversely affected[7]	>0.5ha or 5-25% of site area or 5-25% of associated linear feature or population adversely affected	25-50% of site area, associated linear feature or population adversely affected	>50% of site area, associated linear feature or population adversely affected
Designated land/water sites (nationally important)[6]	<0.5ha of site area or <10% adversely affected	>0.5ha or 10-50% of site area, associated linear feature or population adversely affected	>50% of site area, associated linear feature population adversely affected	N/A
Other designated land[6]	<10ha of site area or <10% adversely affected	10-100ha or 10-50% of land adversely affected	>100ha or >50% of land adversely affected	N/A

[6] Criteria extracted directly from CDOIF Guidance Criteria[1]

[7] 'Adversely affected' is defined for each receptor category in the DETR Guidance, but generally refers to serious damage to habitats or designated features of the habitat or designated site [4]

Reactor Type	Severity of Harm			
	Not Significant	**Severe**	**Large**	**Very Large**
Scarce habitat[6]	<2ha of site area or <10% adversely affected	2-20ha or 10-50% of habitat adversely affected	>20ha or >50% of habitat adversely affected	N/A
Widespread habitat – non-designated land[6]	Contamination of <10ha	Contamination of 10-100ha of land, preventing growing of crops, grazing of domestic animals or renders the area inaccessible to the public because of possible skin contact with dangerous substances. Alternatively, contamination of 10ha or more of vacant land.	Contamination of 100 – 1000 ha (applied as per text under 'Severe')	Contamination of >1,000ha (applied as per text under 'Severe')
Widespread habitat – non-designated water[6]	N/A	Contamination of aquatic habitat which prevents fishing or aquaculture or renders it inaccessible to the public.	N/A	N/A
Particular species (these criteria apply nationally)[6]	Loss of <1% of animal or <5% of plant ground cover in a habitat.	Loss of 1-10% of animal or 5- 50% of plant ground cover.	Loss of 10-90% of animal or 50-90% of plant ground cover.	Total loss (>90%) of animal or plant ground cover.

Reactor Type	Severity of Harm			
	Not Significant	**Severe**	**Large**	**Very Large**
Fresh and estuarine water habitats[6]	Impact below that indicated to be severe	Water Framework Directive (WFD) chemical or ecological status lowered by one class for 2-10km of watercourse or 2- 20ha or 10-50% area of estuaries or ponds. Interruption of drinking water supplies, as per Groundwater Source of Drinking Water.	WFD chemical ecological status lowered by one class for 10-200km of watercourse or 20-200ha or 50-90% area of estuaries and ponds. Interruption of drinking water supplies, as per Groundwater Source of Drinking Water.	WFD chemical or ecological status lowered by one class for >200km of watercourse or >200ha or >90% area of estuaries and ponds. Interruption of drinking water supplies, as per Groundwater Source of Drinking Water.
Marine[6]	<2ha littoral or sub-littoral zone, <100ha of open sea benthic community, <100 dead sea birds (<500 gulls), <5 dead/significantly impaired sea mammals.	2-20ha littoral or sub-littoral zone, 100- 1,000ha of open sea benthic community, 100-1,000 dead sea birds (500-5,000 gulls), 5- 50 dead/significantly impaired sea mammals.	20-200ha littoral or sub-littoral zone, 100-10,000ha of open sea benthic community, 1000- 10,000 dead sea birds (5,000-50,000 gulls), 50-500 dead/significantly impaired sea mammals.	>200ha littoral and sub-littoral zone, >1,000ha of open sea benthic community, >10,000 dead sea birds (>50,000 gulls), >500 dead/significantly impaired sea mammals.
Groundwater or surface water source of drinking water[6]	Interruption of drinking water supply <1000 person-hours or for England and Wales only	Interruption of drinking water supplied from a ground or surface source (where persons affected x duration in hours [at least 2]	>1 x 107 person-hours interruption of drinking water (a town of ~100,000 people losing supply for month) or for England and Wales only 10- 100ha SPZ	>1 x 109 person-hours interruption of drinking water (~1 million people losing supply for 1 month) or for England and Wales only >100ha SPZ drinking water standards breached

Reactor Type	Severity of Harm			
	Not Significant	**Severe**	**Large**	**Very Large**
	<1ha Source Protection Zones (SPZ)	>1,000) or for England and Wales only 1-10ha of SPZ where drinking water standards are breached	drinking water standards breached	
Groundwater - non drinking water source[6]	<1ha	1-100ha of aquifer where water quality standards are breached (or hazardous substance is discernible)	100-10,000ha	>10,000ha
Soil or sediment (i.e. as receptor rather than purely a pathway)[6]	Contamination not leading to environmental damage (as per Environmental Liability Directive (ELD)), or not significantly, affecting overlying water quality.	Contamination of 10-100ha of land etc. as per widespread habitat; contamination sufficient to be deemed environmental damage (ELD)	Contamination of 100-1,000ha of land, as per widespread habitat; contamination rendering the soil immediately hazardous to humans (e.g. skin contact) or the living environment, but remediation available.	Contamination of >1,000ha of land, as per widespread habitat; contamination rendering the soil immediately hazardous to humans (e.g. skin contact) or the living environment and remediation difficult or impossible.
Historic environment[6]	Damage below a level at which designation of importance would be withdrawn.	Damage sufficient for designation of importance to be withdrawn.	Feature of historic environment subject to designation of importance entirely destroyed.	N/A

Duration of harm

1.1.10 The duration of harm, which might also be considered as the recovery period, is also a factor in establishing criteria for the magnitude of change relating to Major Accidents and Disasters on non-human receptors. This is given in **Table 16A 1.2**. The criteria are taken directly from the CDOIF guidance[1].

1.1.11 Four categories of duration are considered: short term, medium term, long term and very long term.

Table 16A 1.2 Major Accidents and Disasters duration of harm criteria (non- human receptors)

Description	Short term	Medium term	Long term	Very long term
Groundwater or surface water drinking water source (public or private)	N/A	N/A	Harm affecting drinking water source or Source Protection Zone (SPZ) <6 years	Harm affecting drinking water source or SPZ >6 years
Groundwater (except drinking water sources)	Water Framework Directive (WFD) hazardous substances <3 months	WFD hazardous substances >3 months	WFD hazardous substances >6 years	WFD hazardous substances >20 years
	WFD non-hazardous substances <1 year	WFD non-hazardous substances >1 year	WFD non-hazardous substances >10 years	WFD non-hazardous substances >20 years
Surface water (except drinking water sources - see above)	<1 year	>1 year	>10 years	>20 years
Land	<3 years	>3 years or >2 growing seasons for agricultural land	>20 years	>50 years

Description	Short term	Medium term	Long term	Very long term
Historic environment	Can be repaired in <3 years, such that its designation can be reinstated	Can be repaired in >3 years, such that its designation can be reinstated	Feature destroyed, cannot be rebuilt, all features except world heritage site.	Feature destroyed, cannot be rebuilt, world heritage site

Number of people affected

1.1.12 For human receptors the magnitude of change is categorised based on the number of people affected (**Table 16A 1.3**) to provide appropriate positioning against HSE risk tolerability concepts[2].

Table 16A 1.3 Number of people affected

	Number of people affected		
	Low	**Medium-High**	**Very High**
Human Populations	Less than 5	5 or more up to 10s of people	100s of people

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