

SRAM Section 13

Guidance For Environmental Assessment Of COMAH Safety Reports

Under Remodelled COMAH Assessment and Inspection procedures

the Competent Authority



Introduction

1. This version of the Safety Report Assessment Manual (SRAM) section 13 has been written to support Agency Inspectors (Environment Agency (EA) and Scottish Environment Protection Agency (SEPA)) carry out assessment and inspection of Safety Reports as described in the remodelled COMAH procedures.
2. The Competent Authority (CA) wants to carry out more inspection to verify safety reports (previously the emphasis was on assessment). This revised guidance for environmental assessment promotes this principle by pulling together the key environmental aspects from throughout the full SRAM into a single section. This streamlines the assessment process and reduces the need to cross reference the whole SRAM.
3. The majority of safety reports received will be revisions, rather than full new safety report. By following this guidance we will ensure that, for revisions, less time will be spent on assessment of the Safety Reports and more time spent inspecting the site against the Safety Report, i.e. Inspection is the primary driver used to ensure that measures are adequate to control risk.
4. The Agency Inspector should consider whether the revised report continues to make Schedule 4 [to the COMAH regulations] demonstrations (see the Team Assessment Conclusions Record) and should focus on hazard analysis, risk assessment and site ALARP demonstrations.
5. The key criteria to be met for environmental assessment are stated in the tables below. Each of the SRAM criteria is split into two sections – one to support the assessment phase and one for the Inspection phase. Guidance is provided on what the Agency Inspector should look for during assessment and inspection of the Safety Report, structured with the aim that Inspection is used to verify issues at a deeper level than assessment. Cross reference is also made to Delivery Guides, where specific guidance exists to enable in-depth verification.
6. The environmental criteria do still include some cross-references to other sections of the Safety Report Assessment Manual and COMAH regulations. These cross-references may be used by the Agency Inspector if more depth of analysis is required (as is expected to occur during Inspection activities). They can also be used to help achieve consistent team conclusions.
7. When considering the revised safety report, Agency Inspectors should also determine whether there are any changes that might constitute a 'new permission' relevant to Habitats regulations or Countryside and Rights of Way Act. Such changes should be considered to fall under regulation 8 (4) and should be dealt with under existing procedures – full SRAM (see EA Easinet for **Habitats** and **CROW**).

General Guidance for Assessment of Environmental Criteria

8. The underlying factors of a major accident lie in aspects common to 'human safety' and the 'environment', be these mechanical, electrical and control, process safety or human factors. In the context of major accidents and their prevention 'environment' is not treated as a separate discipline to 'health and safety'. While the receptor has no bearing on the causes or the prevention of an accident, some events carry a significant, predominant or solely environmental hazard and risk. These must be addressed in the environmental assessment process.
9. Three components need to be present before a risk can be manifest, namely:
 - a) Source (of hazard).
 - b) Pathway (between source and receptor).
 - c) Receptor (of the hazard).

For COMAH purposes, environmental risk assessment combines these components to provide an indication of whether a Major Accident To The Environment (MATTE) is possible and to define the Establishment Impact Environ (EIE) – the zone around an establishment which may be impacted over MATTE thresholds.

10. Historically, MATTEs within the UK and Europe have occurred most frequently due to liquid releases (including firewater) impacting upon land and water. Agency Inspectors are expected to pay a proportionately greater amount of their time assessing all aspects relevant to liquid release scenarios. Conversely, incidents involving MATTE caused by aerial dispersion are considerably less frequent. Aerial pathways should not be overlooked by the Safety Report (and the Environment Agency has a role in Air Quality Monitoring for Major Incidents). However, if the potential for such a MATTE has been identified by an operator then effort should be placed on assessing and inspecting measures for prevention and mitigation (as opposed to detailed assessment of whether extent and severity has been precisely predicted). Moreover, aerial dispersion is likely to be examined in detail by HSE predictive specialists whilst it is less likely that HSE will examine liquid run-off in detail.
11. Attention of assessors is drawn to the guidance contained in Section 8 of the full SRAM - 'How to use the Criteria' under the heading of 'Use of the Criteria' concerning avoidance of duplicated assessment.

12. Further guidance to support assessment of Safety Reports can be found from various sources, including:
 - L111 – COMAH regs guidance;
 - HSG 190 – Preparing Safety Reports;
 - COMAH guidance (**HSE website - SRAGs, ALARP, Accident reports etc**);
 - CA procedures (COMAH manuals, procedures, DGs, SPCs);
 - DEFRA MATTE guidance;
 - Guidance on the Environmental Risk Assessment Aspects of COMAH Safety Reports (**EA website**);
 - Web based environmental GIS system (**Easimap** or **MAGIC**);
 - Environmental classification database (**N-Class**);
 - eMARS - major accident database (**eMARS homepage**); and
 - Good practice guidance, codes and standards (eg, PPGs, Environmental Permitting Guidance, HSGs, industry codes, PSLG final report).
13. Some of the information required to assess the impact on the environment may already have been prepared for environmental impact assessment or other authorisation procedures. It is permissible for the operator to refer to this information. However, assessment is made easier and more efficient if it is submitted as part of the COMAH safety report, rather than by reference to authorizations sent separately to the Agencies.
14. This guidance provides an indication of the aspects that need to be considered by the Agency Inspector. It is not intended that all elements should be addressed during assessment or during the inspection(s) in the first year following safety report resubmission. The Agency Inspector should carry out a level of assessment which is focused on MATTEs and proportionate to the scale and nature of the environmental risk posed by the establishment.
15. The descriptive and predictive aspects [criteria 13.1 – 13.7] are considered first to enable Agency Inspectors to identify the areas of COMAH activity with MATTE potential. The Technical, MAPP & SMS and Emergency Planning criteria follow [13.8 onwards] so that this assessment can be focused on those parts of the establishment with MATTE potential.
16. The results of any pre-submission discussions with the operator should be recorded on the 'SRAM section 13 assessment & inspection record' spreadsheet. Results of the assessment and inspections should also be entered into this spreadsheet.

Appendix 13.1 ENVIRONMENTAL ASSESSMENT CRITERIA AND GUIDANCE	
Descriptive Aspects	Guidance
<p>Criterion 13.1 Assessment</p> <p>The safety report should identify and describe all environmental pathways and receptors which could be effected by dangerous substances present or anticipated to be present at the establishment.</p> <p>With respect to designated sites, full description of their sensitivity should be included and all other receptors should be referenced.</p> <p>[Schedule 2 para 4(b); Schedule 4 Part 2 para 2]</p>	<p>By use of tools such as GIS, Agency Inspectors should check all pathways and receptors have been identified, checking especially to ensure the operator has included any changes since the previous safety report.</p> <p>The area over which pathways and receptors should be identified depends on the nature of potential major accidents. It would be expected that a range of 10 km would be reasonable.</p> <p>Assessment to focus on new or changed receptors and pathways for releases to air, land and water:</p> <ul style="list-style-type: none"> ■ designations; ■ conservation status; ■ land use; or ■ other changes relevant to MATTEs. <p>Receptors should include:</p> <ul style="list-style-type: none"> ■ the presence of Red Book species. ■ designated Areas (SAC, SPA, SSSI, AONB, Ramsar sites, Local Authority nature classification schemes, etc.). ■ surface waters, including ditches, and their classification. ■ groundwater and aquifers and their classification. ■ drinking and industrial water abstraction points (ground and surface), and the extent of source protection zones. ■ amenity areas. ■ sites of architectural and historical importance. ■ soil and sediment. ■ agricultural resources (including market gardens and allotments). ■ Grade 1 listed buildings. Information on the built environment is expected to include each listed building and monument that may be vulnerable to the effects of a major accident. <p>Factors that could affect the behavior of accidental releases in the environment should be described. These should include hydrology, meteorology, hydrogeology, geography and climate. For surface waters the description should include information on direction and rate of flow, tides, currents and flood plains and their variability with different weather conditions – ie, those matters that might influence dispersion or accumulation in the aquatic environment.</p> <p>Surveys may be needed to determine the nature of local ecosystems.</p>

	<p>Activities beyond the site boundary that may interact with the site should be identified. These may include neighboring industrial facilities, water treatment plants connected by rivers or sewer systems, and upstream processes. Examples of interactions which should be considered include spills from the site causing damage to connected facilities, combinations of released substances which may react to produce an environmental hazard, and upstream processes transferring off-spec material leading to upsets on the installation.</p> <p>Land use pattern should be considered (ie, industry, agriculture, urban settlements, environmentally sensitive locations etc.).</p>
<p>Criterion 13.1 Inspection</p> <p>Are pathways and receptors surrounding the establishment correctly identified and adequately described in the Safety Report?</p> <p>The Agency Inspector should consider whether to seek other specialist resource from, teams with knowledge of the local environment and potential pathways or specialist knowledge on given habitats.</p> <p>[Schedule 4 Part 2 para 2]</p>	<p>Inspection should aim to verify that the safety report has correctly described all environmental pathways and receptors surrounding the establishment.</p> <p>Inspection may be carried out within a 10 Km radius of the site (or less if a smaller Establishment Impact Environ – EIE – has been agreed). However, it is anticipated that most resource will be focused on the establishment’s immediate surroundings (ie, <1km).</p> <p>Preliminary</p> <ul style="list-style-type: none"> ■ Collate available maps and plans and descriptions of offsite environmental receptors and pathways. ■ Carry out preliminary survey of site’s surrounding – this may be on foot but also driving around the wider establishment impact environ (EIE) - paying particular attention to the pathways for spills and firewater. ■ Identify whether any new features, which may change pathways surrounding the establishment have been introduced since the last report was submitted and whether these are included as necessary in the revised safety report. For example, new buildings or roads and their associated drainage. <p>Detailed inspection</p> <p>In depth verification of presence and nature of pathways immediately adjacent to the establishment (ie, the area immediately susceptible to liquid run-off). Inspectors to verify aspects of topography and hydrology and in particular drainage features and their form of construction (man-made and natural). Particular attention should be given to areas adjacent to low points on the establishment where run-off may leave the site boundary and enter drainage features.</p>

<p>Criterion 13.2 Assessment</p> <p>The safety report shall include a description of the aspects of the establishment that could be a factor in the potential for releases to the environment.</p> <p>N.B. Criterion 13.8 deals with this in more detail.</p> <p>[Schedule 4 Part 2 para 3]</p>	<p>The Agency Inspector should check that the Safety Report includes description of:</p> <ul style="list-style-type: none"> ■ Location, inventory and conditions of substances dangerous to environment (including those non COMAH substances which may be released in the event of a major accident). ■ Overview of primary, secondary and tertiary containment systems related to dangerous substances. ■ Topography and drainage (eg, general arrangement and purpose (eg, foul water, fire fighting run-off water) to include location of penstocks, barriers, valves etc. ■ Location and capacity of sumps, interceptors, fire-water lagoons, effluent treatment plant and any other barriers to off-site transport of polluting matter. ■ The location of discharge points to watercourses/foul sewer/effluent treatment plants/soakaways. ■ Overview of associated safety (or environment) critical control systems. <p>The safety report should contain plan(s), map(s) or diagram(s) which clearly set out information about the installations with major accident potential.</p> <p>The information presented should allow determination of the purpose, location and function of equipment within the installation that has a bearing on major accident prevention and control.</p>
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<p>Criterion 13.2 Inspection</p> <p>Is the establishment correctly and adequately described in the safety report?</p> <p>Note – In-depth inspection of technical measures also falls under SRAM criterion 13.8.</p> <p>[Schedule 4 Part 2 para 3]</p>	<p>Inspection should aim to verify that the safety report has correctly described the establishment and in particular those aspects that relate to MATTEs.</p> <p>Inspection to include verification of description and any maps and plans of the establishment provided with the safety report.</p> <p>The operator should be able to provide a map of all temporary storage on the site.</p> <p>Detailed inspection To verify information about items of plant such as:</p> <ul style="list-style-type: none"> ■ monitoring equipment, eg, for toxic products in air, sewers, discharges to water; for fires or explosive atmospheres; ■ treatment plants (on or off-site); ■ detection, shutdown; ■ location of pumps, valves, pipework, penstocks and firewater lagoons; ■ site layout and drainage, capacity and condition of drains, etc; ■ suitability, capacity and condition of treatment plant; ■ details relating to safety (or environment) critical valves, instruments, control loops and detection systems; ■ geographical/geological/hydro-geological features that may impede/facilitate pollutant escape. <p>To verify that the operator has not overlooked historical drainage features which may be evident visually on site (as evident from manholes/gully pots) or depicted within historical site plans.</p> <p>Also, management factors such as operator response, control procedures, distances between sources and pathways.</p>
<p>Criterion 13.3 Assessment</p> <p>The safety report should include a description of the dangerous substances which have a potential environmental impact.</p> <p>[Schedule 4 Part 2 para 3]</p>	<p>Dangerous substances are those which are either,</p> <ul style="list-style-type: none"> ■ listed in Schedule 1 Part 2 of the Regulations; or ■ meet the criteria laid down in Schedule 1 Part 3. <p>Those to be identified are:</p> <ul style="list-style-type: none"> ■ all dangerous substances at or above lower tier and upper tier threshold quantities; and ■ other dangerous substances below these quantities, if they are capable directly or indirectly of being involved in a major accident. <p>Any omission to describe a dangerous substance should be justified.</p>

	<p>Sources of the materials include:</p> <ul style="list-style-type: none"> ■ raw materials, intermediates, finished products, by products and wastes; and ■ substances produced during process excursions, or other unplanned but foreseeable events. <p>The description should include:</p> <ul style="list-style-type: none"> ■ quantities present; ■ physical and chemical behaviour (normal and accident conditions); ■ toxicity data (eg, dose-response); ■ environmental harm criteria (eg, LC50 data, critical loads); ■ negligible effect criteria (eg, No Observed Effect Levels, Suggested No Adverse Response Levels); ■ other potentially harmful properties, for example, BOD/COD, blanketing/smothering or effects on potable water supplies may need to be considered; ■ Other information that may be required includes persistence, bioconcentration factor, bioaccumulation potential, solubility, and density. <p>If harm criteria are used then the relevant receptors must be clearly identified.</p> <p>Further Descriptive Criteria Guidance</p> <ul style="list-style-type: none"> • Where an establishment has a large number of different dangerous substances present, it may be necessary to group them into representative categories (in line with Schedule 1 Part 3), for the purpose of quantification. In such cases the safety report should explain and justify the basis for the groupings chosen. • The maximum inventories calculated should take into account fluctuations in business activity and the established quantity under the Planning (Hazardous Substances) Regulations 1992, 1 as updated by the Town and Country Planning, England and Wales - The Planning (Control of Major Accident Hazards) Regulations 1999. There may be other legal authorisations which refer to quantities (eg, IPPC or IPC). • Where a number of different dangerous substances are present on an establishment at less than their qualifying quantity, the safety report should show how individual quantities have been aggregated. • To allow the assessors to establish if all substances arising from foreseeable excursions have been identified, then operators are advised to give details of measures taken to identify such substances.
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<p>Criterion 13.3 Inspection</p> <p>Are the Dangerous Substances on site as described in the Safety Report?</p> <p>[Schedule 4 Part 2 para 3]</p>	<p>Inspection strategy to include sampling of MSDSs and stock inventories.</p> <p>Full inventory of MSDSs should be available on site. Full stock inventory (Current) records and control procedures. This information should be available to inform emergency responders in case of an incident.</p> <p>Are quantities of dangerous substance present in accordance with the Safety Report? Do MSDSs provided agree with information in the Safety Report (to include verification of Risk/Hazard phrases)?</p>
<p>Predictive Aspects</p>	<p>Guidance</p>
<p>Criterion 13.4</p> <p>The safety report should identify all Major Accident Scenarios which have potential environmental impact.</p> <p>[Schedule 2 para 4(b); Schedule 4 Part 1 para 2 Schedule 4 Part 2 para 4]</p>	<p>Agency Inspectors may find it useful to review historical incidents within the industry sector or involving dangerous substances present at the establishment (eg, via eMARS).</p> <p>The safety report should identify all possible MATTE scenarios by reference to all possible MATTE criterion presented in the DEFRA guidance. Including scenarios which:</p> <ul style="list-style-type: none"> ■ fulfil the fundamental characteristics of a MATTE or match any MATTE example (a-k) (see pages 17 & 18 of DEFRA MATTE guidance); or ■ exceed a criteria/threshold in Chapter 4 Tables of DEFRA MATTE guidance (pages 20 – 27). <p>The operator should describe the methodology used to identify release scenarios.</p> <p>Potential releases should be identified, which should include a consideration of worst case failures (inventory and process) and the sensitivity of the receiving environment (number and types of sensitive sites).</p> <p>Substance behavior upon release should be identified, e.g. reactions with air/water/other substances, changes of phase, dispersion characteristics (dense or buoyant behavior), etc. Substance behavior must be characterized before the types of pathway can be evaluated.</p> <p>Behavior under normal conditions and foreseeable abnormal conditions should be considered.</p> <p>The potential for a release to be associated with firewater should be considered. This could be a direct result of firewater applied to the release or indirectly firewater run-off from another part of the site (i.e. a domino effect).</p>

	<p>Screening on the basis of a dilute (eg, through applying firewater) and disperse risk management option is not an acceptable practice.</p> <p>Consideration should be given to the probability of flooding as a causation or escalation factor.</p> <p>The contribution of the external factor to the major accident could be as an initiating or exacerbating event. Factors for consideration under this criteria include: historical evidence of other external events that might act as accident initiators such as flooding;</p>
<p>Criterion 13.4 Inspection</p> <p>Is the procedure for MAH identification as presented in the Safety Report live and in use on site for ensuring all MATTEs are identified? Do the scenarios presented in the Safety Report adequately represent the Major Accident Hazards of the establishment?</p>	<p>Inspection should examine the procedures for major hazard identification and evaluation (Sch 2 4b) and the output from those procedures to ensure they are consistent with information presented in the safety report.</p> <p>It is useful to include inspection of Management of Change (Sch 2 4d) and Emergency Arrangements (Sch 2 4e) procedures and their linkage to major hazard identification and evaluation procedures. Inspectors may audit recent changes to examine how Major Accident Hazard identification and evaluation was applied during those changes or review emergency arrangements documents to ensure consistency of scenarios.</p> <p>Agency Inspectors should consider the various factors related to source, pathway, receptors as evident at the establishment and consider whether the operator has been successful at identifying all MATTE scenarios. Factors to consider include:</p> <ul style="list-style-type: none"> ■ behavior of released substances; ■ onsite pathway analysis; ■ domino or escalation effects. <p>Pathways by which the substance reaches the environment should be identified.</p>
<p>Criterion 13.5 Assessment</p> <p>The safety report will provide full details of all source, pathway, receptor trios for all Major Accident Scenarios.</p>	<p>This information is usefully summarised by maps and plans indicating where aerial dispersion and deposition may impact sensitive receptors or where run-off of spilled substances and firewater could take place, it's pathways on and off-site and areas effected (ie, to depict linkage between the establishment and the Establishment Impact Environ – EIE).</p> <p>The Safety Report should provide detail of and description of the linkage between :- source, pathway and receptor (SPR) trios.</p>

	<p>Source details should be defined for each accident scenario and should include the following:</p> <ul style="list-style-type: none"> ■ substance released; ■ size, rate/duration of release; ■ conditions of release (pressure, temperature, phase); ■ location, elevation, direction of release. <p>Potential releases should be identified, which should include a consideration of worst case failures (inventory and process) and the sensitivity of the receiving environment (number and types of sensitive sites). Sources should include both the initial release and anticipated actions of emergency responders. For example, use of water sprays and/or foam blanket for firefighting or suppression of vapour.</p> <p>Pathways by which the substance reaches the environment should be identified.</p> <p>The Safety Report should demonstrate that sufficient consideration has been given to characterization of substance behavior to enable the types of pathway to be evaluated.</p> <p>Substance behavior upon release should be identified, eg, reactions with air/water/other substances, changes of phase, dispersion characteristics (dense or buoyant behavior), etc.</p> <p>Behavior under normal conditions and foreseeable abnormal conditions should be considered. For example, the pathways on and off-site should include consideration of failure of layers of protection such as secondary and tertiary containment.</p> <p>The potential for a release to be associated with firewater should be considered. This could be a direct result of firewater applied to the release or indirectly as a result of firewater run-off from another part of the site (i.e. a domino effect).</p> <p>Screening on the basis of a dilute (eg, through applying firewater) and disperse risk management option is not an acceptable practice.</p> <p>Consideration should be given to the role of external factors such as extreme weather causing flooding. The contribution of the external factor to the major accident could be as an initiating or exacerbating event. Other external events include freezing weather (which could both initiate a release and influence dispersion) or subsidence (for example old mine workings, which may again both initiate a release and cause rapid migration through the environment).</p>
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<p>Criterion 13.5 Inspection</p> <p>With consideration to the establishment as observed during inspection, are the SPR trios presented in the Safety Report sufficiently representative of the MATTE scenarios.</p> <p>The Agency Inspector should consider whether to seek other specialist resource from, for example, teams with local knowledge of the environment and potential pathways or specialist knowledge on given habitats.</p>	<p>Inspection should include examination of the methodology used to identify SPR trios - this should be clearly set out, and have procedural documentation (see also criterion 13.4).</p> <p>The operator should describe the methodology used to identify release scenarios. SPR analysis should be present for all major accident scenarios. Operator should provide full details of all site pathways.</p> <p>Inspection of the establishment surrounding – to verify that all SPR trios within the EIE have been identified.</p>
<p>Criterion 13.6 Assessment</p> <p>The safety report should include an assessment of the extent and severity of environmental consequences of major accidents.</p> <p>[Schedule 2 para 4(b); Schedule 4 Part 2 para 4]</p>	<p>Agency Inspectors should ensure the process of consequence assessment presented in the Safety Report, including methods used, is appropriate and representative for the set of MATTE scenarios. When considering the potential uncertainties the operator should have adopted a precautionary approach.</p> <p>The report should include all factors that may determine the extent of environmental impact (eg, ignition, detection, secondary containment failure, drains, emergency procedures, etc.).</p> <p>It is not necessary that the release rate and resultant environmental concentration of every scenario is considered. It is acceptable if a representative set of releases is chosen to cover the range of releases possible – though worst case scenario consequences should be assessed.</p> <p>The resultant environmental concentrations for each member of the set of releases should be given.</p> <p>The effects in the environment should be determined from the predicted environmental concentrations and the toxicity data. The length, area or volume of the environment affected should also be given. The approach used should be described fully.</p> <p>In general the following may be used in combination or separately, for evaluating impacts:</p> <ul style="list-style-type: none"> ■ toxicity relationships; ■ environmental harm criteria; ■ negligible effect criteria; ■ past accident experience; ■ population dynamics modeling.

	<p>Very little information exists on community level responses to damage. In defining the expected level of change, natural variability needs to be considered as this can result in significant changes in receptors. If recovery is assessed then a distinction may need to be drawn between natural unassisted recovery and artificial recovery, particularly if contingency plans include cleanup and restoration that may affect the rate of recovery.</p> <p>Immediate and delayed effects should be considered in the approach to assessing impacts.</p> <p>The operator should conclude if the effects might constitute a major accident.</p> <p>Whilst all scenarios require consequence assessment to determine whether or not they present risk of MATTE, the detail presented for each accident scenario should be proportionate in the context of the risk posed by the establishment as a whole. For example, for many fire events there is greater risk of harm from firewater run-off than aerial dispersion and thus more effort should be placed on quantifying impact from run-off.</p> <p>Once consequences have been predicted to exceed MATTE thresholds, any further information or lack of justifications which are required for full explanation of MAH's consequences should be carried into inspection, rather than an assessment information request.</p>
<p>Criterion 13.6 Inspection</p> <p>Has the extent and severity of all potential MATTEs been adequately defined?</p> <p>The Agency Inspector should consider whether to seek other specialist resource from, for example, teams with local knowledge of the environment and potential pathways or specialist knowledge on given habitats.</p>	<p>Inspection to be used to seek demonstration of detailed aspects of consequence assessment (potentially to include other specialists with specific knowledge of receptor sensitivities).</p> <p>The operator should include the methods used to calculate release rates and the specific values of any variables, such as:</p> <ul style="list-style-type: none"> ■ toxicity relationships (eg, dose-response relationships); ■ negligible effect criteria (eg, No Observed Effect Levels); ■ Suggested No Adverse Response Levels. <p>[It should be noted that the LC50 threshold represents an impact of the severest nature. For risk assessment purposes a threshold of LC/2 or LC/3 provides a suitable indicative environmental harm threshold.]</p> <p>Effects may be to individual species, a range of species (biodiversity), the community structure and the overall habitat or ecosystem.</p> <p>The key uncertainties in the approach should be identified.</p>

	<p>The models/methods used to determine the environmental concentration should be detailed.</p> <p>The specific values of any variables should be given.</p> <p>If harm criteria are used then the relevant receptors must be clearly identified.</p> <p>The operator should ensure that information includes impacts within the EIE.</p>
<p>Criterion 13.7 Assessment</p> <p>The safety report should include conclusions on the probability of the major hazards or the conditions under which they occur.</p> <p>The Safety Report should make the demonstration that risk of Major Accident Hazards have been reduced to ALARP.</p> <p>[Schedule 4 Part 1 paras 2 & 3]</p>	<p>The operator should give an indication of the likelihood of any MATTE identified. Agency Inspectors (with predictive support when required) should ensure all frequencies are realistic (with source documents referenced) and that the QRA outcomes have been used to guide measures for MAH prevention and mitigation.</p> <p>Risk may be assessed by:</p> <ul style="list-style-type: none"> ■ qualitative descriptions (eg, low/medium/high risk); ■ simple relative scoring systems (eg, 1-5, 1-100); ■ quantitative modeling parameters (eg, Environmental Harm Index). <p>The method should be proportionate to risk (the more likely and/or greater the impact the more detail is required). The operator should explain the method used to determine the likelihood's (including reference to sources for any generic failure rate data used) and any assumptions or principles underlying the method.</p> <p>risk results should be summed over all events and scenarios to give the total risk to each environmental receptor (this to be used when considering tolerability).</p> <p>risk results may also be presented as individual scenario/event risk – such a breakdown is useful to inform which are the significant risk contributors.</p> <p>Uncertainties associated with any risk conclusions should be presented.</p> <p>If risk matrices are used these should be realistic and conform to recognized ALARP regions.</p> <p>The Safety Report should draw conclusions on the tolerability of risk, the sufficiency of existing control measures and the need for further measures to ensure risk is reduced to ALARP.</p> <p>Any deviations from good practice, where risk lies in the tolerable if ALARP zone, should be fully justified (eg, by cost benefit analysis).</p>

<p>Criterion 13.7 Inspection</p>	<p>Agency Inspectors should inspect to ensure procedures for frequency assessment and decision making about tolerability of risk are embedded into procedures for all aspects of operation and modification of the establishment.</p> <p>Examples of risk matrix/frequency assessment in use (eg, for Management of Change) should be audited and followed through to identify how the decision process was made.</p> <p>Agency inspectors should be looking to audit frequencies where identified and to follow this through to the final probability figure. This to include further verification of failure rate suitability given actual conditions of the establishment. Any measure deviating from good practice, but reported to have a standard failure rate needs particular attention.</p> <p>Inspection of full ALARP demonstration methodology with audit of example application should be carried out to ensure all assumptions have been fully justified and the outcome recommendations used to inform any necessary improvement within the establishment.</p>
<p>Technical Aspects</p>	<p>Guidance</p>
<p>Criterion 13.8 Assessment</p> <p>The Safety Report should include technical details of design specification for primary, secondary and tertiary containment (including site drainage) along with all design standards used.</p> <p>The Safety Report should provide reference to all inspection procedures and methods for routine and periodic site monitoring.</p>	<p>At assessment stage the Agency Inspector is to ensure the Safety Report contains sufficient information to enable future detailed inspection against the full set of technical measures.</p> <p>This to include:</p> <ul style="list-style-type: none"> ■ All tank design should be referenced - including the design of the tank bases. ■ Tank protection and Leak detection systems such as unauthorized movement alarms should be detailed. ■ All secondary and tertiary containment system design standards should be included and full gap analysis against relevant good practice should be present (for example the containment policy/PSLG final report Part 4 measures).

<p>Criterion 13.8 Inspection</p> <p>Has equipment critical to safety of the environment been designed, built and maintained in accordance with the description in the safety report?</p> <p>Does this represent all measures necessary?</p> <p>[Schedule 4 Part 1 para 2; Schedule 4 Part 2 para 4c & 5a]</p>	<p>The Agency Inspector should consider what other specialist resource may be required to support detailed inspection of technical measures.</p> <p>See Delivery Guides (DGs) for areas where Agency Inspectors lead or have a role in Inspection (eg, secondary and tertiary containment and Emergency Preparedness - on-site plans). Inspection activity should be in accordance with the instructions in the DGs, with the aim to verifying that the operator has taken all measures necessary. In addition, Agency Inspectors should verify that conditions found on site are as described in the Safety Report.</p> <p>Agency Inspectors should contribute to completion of the site Technical Demonstrations Record, by inspecting measures necessary for prevention and mitigation of MATTEs. The Technical Demonstration Record provides further detail for consideration.</p> <p>During inspection operators should be asked to provide demonstration of:</p> <ul style="list-style-type: none"> ■ Design information for primary, secondary and tertiary containment (to include detailed engineering drawings of tanks, pipework, filters/scrubbers, bunds, drains, lagoons, effluent treatment plant etc). ■ Full inspection regimes for safety critical equipment. ■ Tank inspection procedures. (In the event of third party inspections, these should be provided along with the selection criteria for contractor). ■ Full details of tank usage change management systems. ■ Inspection criteria for secondary containment and inspection procedures. (This to include both routine inspection and periodic detailed review that the structure remains fit for purpose – especially important for earth structures). ■ Inspection regimes and procedures should be provided for all tertiary containment aspects including site drainage and surface water channels. ■ Appropriate measures have been taken with regard to pollution control equipment, to include how it is maintained in good operable condition (see also criterion 13.10). <p>The operator should provide evidence of compliance with the above procedures in the form of records associated with all daily/ weekly/month checks.</p>
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SMS & MAPP Aspects	Guidance
<p>Criterion 13.9 Assessment</p> <p>The safety report should detail the environmental management system (EMS) used on the site and provide information of audit systems and audit results. This should include how the EMS relates to the SMS.</p> <p>[Schedule 4 part 1; Schedule 2]</p>	<p>The Safety Report should clearly demonstrate that the operator has an environmental management system (EMS) in place for control of Major Accident Hazards, and in particular is suitable for the MATTE scenarios identified.</p> <p>The safety report should detail the use of environmental risk register and will reference procedures used to populate these registers.</p>
<p>Criterion 13.9 Inspection</p> <p>Are procedures as described in the Safety Report in use at the establishment?</p> <p>Do they represent all measures necessary?</p>	<p>Agency Inspection of MAPP & SMS should be coordinated with HSE Regulatory Inspector inspection activity and focus on procedures for control and mitigation of MATTEs.</p> <p>The operator will have available the full procedures for the population of the risk registers.</p> <p>Full criteria as to suitability of site staff using this procedure(s).</p> <p>The operator will detail and demonstrate compliance with any other management system standards eg, ISO 14001. Full details of how any actions from this external system will be fed into the risk register.</p> <p>The operator should provide evidence that the change management system for both technical measures and procedures includes reference to environmental considerations during the change procedure.</p> <p>Procedures should be in place for environmentally critical problem reporting.</p> <p>MAPP should set out the commitment to environmental protection.</p> <p>Agency Inspectors should ensure all procedures are up-to-date, controlled documents and that the procedures in use do not deviate significantly from those described in the safety report.</p>

Emergency Planning Aspects	Guidance
<p>Criterion 13.10 Assessment</p> <p>The safety report should include a description of the arrangements to prevent MATTEs. This should include all mitigation, containment systems and procedural protections.</p> <p>[Schedule 4 Part 2, Para 5 Schedule 2, Para 4e]</p> <p>With reference to Criterion 14.3</p>	<p>To meet this criterion the report should consider the following: measures to stop or reduce a spillage at source:</p> <ul style="list-style-type: none"> ■ Measures to confine the spillage, the preference being for permanently engineered secondary containment systems fitted with an isolation device but other mobilized resources may be considered (eg, sandbags, drain seals etc). ■ Measures to recover and/or treat the spillage (eg, pumps, chemicals for neutralizing or absorbing the spillage). ■ Tertiary containment measures, effluent plant, penstocks, emergency shutdown systems, site isolations systems etc. and ■ Off-site measure to be deployed by the operator should dangerous substances leave the site boundary (see also criterion 13.14). <p>For each scenario that can result in a MATTE the operator should describe the preventative and mitigatory measures in place.</p> <p>Where a screening approach has been used the operator should use the results of the examination of the representative set of releases to determine which of all of the releases do result in a MATTE and then ensure that for each event the specific precautions are detailed.</p> <p>The Safety Report should outline how arrangements are tested and how lessons learned are used to improve measures for prevention and mitigation of MATTEs.</p>
<p>Criterion 13.10 Inspection</p> <p>Are claims made in the safety report about planned emergency arrangements evident at the establishment?</p>	<p>Agency Inspectors should audit procedures for emergency response to ensure they are adequate and achievable. This can usefully be done at the same time an operator is testing the emergency arrangements. Audits should be combined with inspection activities of the HSE.</p> <p>See Delivery Guide (DG) for Emergency Preparedness - on-site plans. Inspection activity should be in accordance with the instructions in the DG, with the aim to verifying that the operator has taken all measures necessary. In addition, Agency Inspectors should verify that conditions found on site are as described in the Safety Report.</p> <p>All aspects of spill procedures should be available, to include initiating procedures, training, staff allocation and organisation.</p> <p>The operator should be able to demonstrate the type and range of equipment they hold and demonstrate how it is maintained in good operating order.</p>

	<p>The operator should be able to demonstrate necessary contracts are in place if third party assistance is required for any on or off-site mitigatory work (to include clean-up and restoration activities).</p> <p>Exercises themselves or records of exercises should be inspected: Are exercise scenarios appropriate to control of Major Accident Hazards? How have lessons been learned and used to improve measures? Have third parties been involved with emergency exercises?</p>
<p>Criterion13.11 Assessment</p> <p>The safety report should demonstrate that the on-site emergency plan meets the requirements of Schedule 5, including reference to all emergency procedures.</p> <p>[Schedule 4 Part 1 para 4; Schedule 5]</p> <p>With reference to Criterion14.3.4</p>	<p>The Safety Report may provide a full copy of the on-site emergency plan and all on-site emergency procedures referred to in the on-site emergency plan (for complex plans, reference to the relevant parts of the plan is acceptable).</p> <p>The Safety report should demonstrate that the on-site plan is relevant to site activities.</p> <p>The report should demonstrate the on-site plan fulfills the objectives and requirements of Schedule 5 (Part 1 & 2).</p>
<p>Criterion 13.11 Inspection</p>	<p>The on-site plan and all supporting procedures should be inspected.</p> <p>Evidence should be provided of the consultation process with the Environment Agency, and how comments are incorporated into the final version.</p> <p>Details of the criteria for escalation from on-site plan to off-site plan should be evident and understood by those who may need to initiate the off-site plan.</p>

<p>Criterion 13.12 Assessment.</p> <p>The safety report should supply information to enable the off-site emergency plan to be drawn up.</p> <p>[Schedule 4 Part 1 para 4]</p>	<p>The minimum information to be included in the safety report includes:</p> <ul style="list-style-type: none"> ■ Details of the off-site area likely to be affected by major accident scenarios (e.g. indicating the Establishment Impact Environ, potentially impacted environmentally sensitive areas and drainage maps to help determine where spillages might leave site and travel in the wider environment. ■ Details of the dangerous substances on-site covered by the COMAH regulations and set out information for other hazardous materials held on site, including: quantities, hazardous properties and the nature of the effects on people and the environment.
<p>Criterion 13.12 Inspection</p>	<p>At inspection we are looking for the company to provide evidence that the information supplied to the local authority was of sufficient detail and relevance, such that the plan for off-site emergencies should have clearly understood control points and alternative control points and rendezvous points.</p> <p>The company should have informed the local authority what measures it has in place to initiate off-site mitigatory measures, including off-site clean-up and restoration.</p>
<p>Criterion 13.13 Assessment</p> <p>The safety report should provide evidence that suitable arrangements have been made within the safety management system for training of individuals in the on and off-site emergency response.</p>	<p>Training should include where relevant: the nature of major accidents posing a threat to the environment and the particular steps to take in the event of such an accident.</p> <p>Evidence should be provided of targeted training on specific emergency plans and any mitigation that these plans offer to the response to the on-site emergency.</p>
<p>Criterion 13.13 Inspection</p>	<p>The emphasis at inspection should be on the existence of training matrices and that these identify training for individuals in all necessary areas of the emergency procedures relating to environmental protection.</p> <p>Unique personal training records of site staff should be sampled to get a picture of the overall level of training and familiarisation with emergency procedures.</p>

<p>Criterion 13.14 Assessment</p> <p>The safety report should provide evidence of the environmental protection systems available for the protection of vulnerable environs, which are provided by the operator and form part of the off-site emergency plan. This is to include procedures associated with the limiting the effects of major accidents to people and the environment.</p>	<p>The company should provide evidence of the information they supplied to the local council.</p> <p>The company should have in place plans to protect vulnerable environs within the EIE.</p> <p>Examples of measures that may need to be taken include:</p> <ul style="list-style-type: none"> ■ monitoring/sampling arrangements; ■ equipment to contain toxic substances; ■ agents to soak up and/or neutralize contaminants; ■ earth moving equipment for the removal of contaminated soil and other material; ■ booms and skimmers for spillages to water; ■ temporary storage arrangements eg, portable storage tanks, for the contaminated material; and ■ Measures for groundwater remediation.
<p>Criterion 13.14 Inspection</p>	<p>Detailed inspection of the operator's emergency arrangements may usefully take place during on or off-site exercises and should be coordinated with work of HSE (see on and off-site plan delivery guides).</p> <p>Inspection to sample emergency equipment and it's inspection regimes. This should include fire pumps and monitors to ascertain firewater deliver rates/volumes. The operator should provide information on the types of fire fighting foam available and any mutual aid agreements.</p>
<p>Criterion 13.15 Assessment</p> <p>The safety report should provide evidence that suitable and sufficient provisions have been made for restoration and clean up of the environment following a major accident.</p>	<p>The company should have measures in place to provide for environmental restoration works, on and off-site (eg, call-out arrangements with contractors).</p> <p>The safety report should include a clear restoration plan, based on the MATTE scenarios identified.</p> <p>Other points to consider, where necessary, include:</p> <ul style="list-style-type: none"> the envisaged timescale over which temporary containment may be required; the arrangements made to ensure that such facilities would not pose an unacceptable threat to health and the environment; suitable disposal arrangements.

<p>Criterion 13.15 Inspection</p>	<p>The operator should be asked to provide evidence of a suitable restoration plan along with criterion for any contractor to be used in the event of a major accident.</p> <p>This should include checking that the operator has sufficient understanding of the possible monitoring and testing required to determine extent of polluted environs both natural and man made (eg, food production).</p>
<p>Climate Change Adaptation</p>	<p>Guidance</p>
<p>Criterion 13.16 Inspection only</p> <p>The operator will provide information on their climate change adaptation plans.</p>	<p>This element is currently intended for inspection activity only.</p> <p>The officer will look for evidence that the Safety Report has considered and planned for the implications of climate change.</p> <p>Safety Report to include consideration of:</p> <ul style="list-style-type: none"> ■ Current flood protection systems and whether these have been projected to be suitable for future needs; and ■ More frequent storm events. <p>Safety Reports to include the implications climate change may have on assumptions within the predictive aspects section, such as frequencies of initiation and mechanisms for escalation of major accident scenarios.</p> <p>Reference should be to the DEFRA climate change documents Climate Change Adaptation Strategy (2008-11) Developing climate change adaptation action plans Climate adaptation: Risk, uncertainty and decision-making, UKCIP Technical Report May 2003</p>