

COMAH Competent Authorities

Operational Delivery Guide

Inspection of COMAH Internal Emergency Planning at Upper and Lower Tier Establishments

Title

COMAH CA Operational Delivery Guide: Inspection of COMAH Internal Emergency Planning at Upper and Lower Tier Establishments

Open Government status

Fully open

Target audience

All relevant COMAH Competent Authority (CA) staff (HSE/ONR/EA/SEPA/NRW)

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Purpose

1. This Delivery Guide (DG) supports the Competent Authority's (CA's) approach to regulating major hazards by establishing a framework for the inspection of the internal emergency response arrangements for minimising the consequences of major accidents at establishments subject to the Control of Major Accident Hazard Regulations (COMAH) 2015. It builds on the Major Hazard Regulatory Model (<http://www.hse.gov.uk/regulating-major-hazards/major-hazards-regulatory-model.pdf>) and supports the CA's policy of targeting regulatory resource towards those activities that either give rise to the greatest risk, or that are managed less effectively.
2. The DG defines the key elements of an operator's arrangements for sampling and inspection under this topic and the criteria inspectors should use to evaluate operator performance. These elements are:
 - a) arrangements for the preparation, review and testing of internal emergency plans by upper tier (UT) COMAH establishment operators under Regulations 11 and 12 of COMAH 2015; and
 - b) arrangements for planning for emergencies documented in accordance with the Major Accident Prevention Policy (MAPP) prepared by lower tier (LT) COMAH establishment operators under Regulation 7 of COMAH 2015.

Background

3. Emergency planning was introduced as a strategic priority inspection topic by the CA in 2010/11. It was underpinned by DGs for both internal and external emergency planning which provided a framework for CA inspectors to assess operator performance against defined success criteria in a consistent way.
4. A review of the internal emergency planning DG found that the majority of COMAH establishments rated had achieved a reasonable standard of compliance in terms of their onsite plans addressing all reasonably foreseeable scenarios arising out of a representative set of credible major accident hazard incidents. However, there are situations where the operator relies on an external Fire and Rescue Service (FRS), or other sources of external assistance, for the emergency response at their establishment. The review found this aspect of emergency planning had not been explicitly benchmarked and therefore levels of operator performance are currently unclear.
5. The CA recognises that the general requirements for on-site emergency arrangements are long-standing, well understood and have been subject to significant regulatory scrutiny. The CA therefore considers that internal emergency planning no longer needs to be a strategic priority topic for inspection. Instead, the regulatory focus should be refined to include explicit consideration of whether the necessary consultation and planning has taken place between the operator, their FRS provider, and any other mutual aid providers, where their assistance is required to implement the establishment's

emergency planning arrangements. This revised DG captures and articulates the CA's refined focus.

6. In undertaking their role as the Designated Authority the environmental agencies may be able to support intervention under this DG providing supporting information or experience to ensure correct selection of the appropriate sample points.

Action by CIMs

7. COMAH Intervention Managers (CIMs) should continue to include inspection of internal emergency planning arrangements within their intervention plans. The Profiling, Targeting and Strategy (PTS) approach and liaison with CA partners will assist in identifying relevant establishments and planning interventions. This revised DG can be deployed to ensure consistency of regulatory approach and performance rating for these interventions.

Action by Inspectors

8. The section below describes the key elements of internal emergency planning arrangements that should be considered during inspections against this DG. It goes on to identify success criteria that inspectors can use to judge the performance of establishment operators (see 'judging success and moving on' below). Annex 2 provides further guidance on specific core intervention issues to assist inspectors; these now include COMAH operator arrangements for providing assistance with mitigatory actions outside the establishment.
9. Distinctions are made between requirements that apply only to operators of UT establishments, those that apply only to operators of LT establishments and those that apply to both, to reflect differences in the regulatory requirements.
10. Where weaknesses are found, inspectors should explore whether these are the immediate manifestations of deeper-seated problems in the operator's safety management system (SMS) for major hazards. Required actions should focus on ensuring any problems at SMS level are addressed to achieve sustained compliance, rather than dealing with rectifying immediate deficiencies only.

Key elements of internal emergency planning arrangements

For all COMAH establishments (LT & UT)

11. Where the operator relies on external services (e.g. FRS) to assist with the response to incidents at the establishment, inspectors should confirm that the operator has made adequate arrangements between itself, the FRS and other offsite responders (e.g. contracted industrial firefighters and spill responders), (see Annex 1 supporting information 1 and 2).

For UT establishments

12. Inspectors should confirm the adequacy of the operator's arrangements for the preparation, staff training, review and testing of the internal emergency

plan (IntEP) at the COMAH establishment under COMAH Regulation 12 (see Annex 1, supporting information 3 - HSE publication L111). If COMAH and other legislation requiring emergency plans apply to the same site, a single emergency plan may be prepared provided it covers all relevant requirements. The objectives for the IntEP (COMAH Regulation 11) and the minimum information requirements (COMAH Schedule 4, part 1) can be found in publication L111. In particular inspectors should:

- a) Verify that the IntEP contains the information specified in COMAH 2015 Schedule 4, Part 1 as required by COMAH Regulation 12(4). See the core intervention issues and associated guidance in Annex 2 for further guidance and information on specific topics that the IntEP needs to cover and areas where weaknesses are commonly found.
- b) Confirm the operator has consulted with the parties specified in COMAH Regulation 12(5). In particular, consultation with the emergency services, appropriate environmental regulator, health authority and local authority should ensure that the IntEP and response arrangements effectively dovetail with those off-site, including instructions in the IntEP covering how, when and by whom the external emergency plan will be initiated. The key to effective dovetailing is communication between site personnel and good information flow between site personnel and emergency responders (see Annex 1 supporting information 4).
- c) Verify that the operator tests the key elements of its emergency response arrangements at least once every three years to establish how well they work in practice. The nature of the scenario tested should vary in each three-year cycle to ensure the range of emergency responses required for foreseeable incidents are examined (COMAH Regulation 12(6)(b)). Performance indicators can be used to monitor the adequacy of key emergency response elements during testing or in a real scenario (see Annex 1 supporting information 5).
- d) Confirm that the operator periodically reviews, and where necessary revises its IntEP, ensuring they systematically identify and embed any lessons learned from testing into revisions of the plan (COMAH Regulation 12(6)(a), (7) & (8))
- e) Confirm the operator has sent the information necessary to prepare the COMAH external emergency plan (COMAH Regulation 13(3)) to the 'local authority' as defined in COMAH 2015.

For LT establishments

13. Inspectors should ensure that the operator has prepared a Major Accident Prevention Policy (MAPP) to comply with COMAH Regulation 7 and, through the Safety Management System (SMS), put arrangements in place to deal with an emergency as required by Schedule 2(2)(e). It should be noted that whilst LT COMAH establishments are not required to have an IntEP as prescribed by Regulation 12 for upper tier establishments, COMAH Regulation 5 requires operators to 'take all measures necessary to prevent

major accidents and limit their consequences for human health and the environment’.

14. Inspectors should check that the principles considered when preparing a MAPP and SMS include planning for emergencies and the adoption of procedures to:
 - a) Identify foreseeable emergencies by systematic analysis, proportionate to the MAH risks presented by the establishment;
 - b) Prepare, test and review emergency plans to respond to such emergencies; and
 - c) Provide specific training for all persons working in the establishment.

Judging success and moving on

15. Success criteria for UT and LT emergency planning inspection issues are defined below. Inspectors should compare key findings from their inspection with the relevant success criteria to rate the operator’s performance in line with the descriptors and scores in Table 1 below.

For all COMAH establishments (LT & UT)

16. Where the COMAH operator relies on external resource to respond to an on-site incident, liaison with the FRS in the development of pre-incident plans covers:
 - a) Information on key MA scenarios, including significant hazards, potential events and impact of consequences that can be anticipated, including: quantity and rate of release of hazardous material; effect of smoke effluent, explosion, thermal radiation, fire-fighting water run-off and hazardous material on other plant areas, persons and the environment.
 - b) Arrangements for raising early warning of the incident with the FRS and supplying information on establishment layout including access and rendezvous points, suitable hard standing for vehicles, establishment emergency response facilities, drainage, fire-fighting water containment capability and evacuation arrangements.
 - c) Provision of information on the location and vulnerability of emergency response equipment and resources (including water and foam supplies) available at the establishment.
 - d) Identification of all instances of reliance on external FRS including the adequacy of joint arrangements and identification of any limitations in availability of resources that must be considered and addressed within the establishment’s emergency response arrangements.
 - e) Suitable testing and performance monitoring of emergency response to demonstrate the adequacy of joint arrangements between the operator, the external FRS, and any other responders such as spill response contractors. Performance indicators can be used to monitor adequacy

of key emergency response elements either during testing or in a real scenario (see Annex 2, supporting information 5). Examples of performance indicators are given in Annex 3.

17. Where a duty holder has identified credible major accident hazards that may require resources beyond those available at the establishment, entering into a mutual aid agreement with other operators may be an option. The agreement does not remove the operator's duty to take "all measures necessary" but is intended to supplement these on the basis the duty holder has already put in place all reasonably practicable preventive and mitigatory measures.
18. Emergency response equipment is included on an appropriate inspection and maintenance schedule and seen to be in a good state of repair.

For UT establishments

19. The operator has put in place and keeps up to date an IntEP and response arrangements that meet the requirements of COMAH Schedule 4 Part 1 and are fit for purpose. In particular:
 - a) The IntEP covers all reasonably foreseeable emergency scenarios arising out of a representative set of credible major hazard incidents, including low probability, high consequence events.
 - b) The IntEP clearly allocates roles and responsibilities, providing clear instructions for each of these and any actions that may be necessary.
 - c) The IntEP has clearly defined arrangements for warning and alert, and communications between all those with responsibilities in the IntEP, any off-site emergency services and authorities who may have roles to fulfil and, where necessary, the neighbouring public.
 - d) All those with roles and responsibilities within the IntEP are trained and competent to fulfil their roles.
 - e) The operator systematically tests, and where necessary, reviews and revises the IntEP at suitable intervals not exceeding three years, ensuring that any lessons learned are captured and embedded in those revisions.
 - f) The IntEP has clear instructions on when, how and by whom the external emergency plan should be initiated in the event an escalating incident is likely to have off-site consequences. Examples of key interface areas between the internal and external emergency plans are given in Annex 2, Box 5.
 - g) The operator has arrangements for assisting with mitigation outside the establishment.
20. The operator has in place arrangements for informing the public around the establishment about the site, any safety measures it has in place, and the actions required of the public should a major accident occur at the site. This

information should be reviewed and, where necessary, revised at least once every three years and resupplied at least once every five years, or following a revision (COMAH Regulation 18).

21. The operator has passed to the local authority Emergency Planning Unit the information necessary to enable preparation of the external emergency plan for the site.

For LT establishments

22. The MAPP and SMS should contain details about the emergency planning and response arrangements that meet the requirements of COMAH Schedule 2, Paragraph 2(e). Although these are not required to be to the depth specified by Schedule 4, the procedures must ensure that an adequate emergency plan is developed, adopted, and implemented.
23. The nature and extent of emergency arrangements are proportionate to any major accident hazards presented by the establishment and comply with duties under other health, safety, and environmental relevant statutory provisions.
24. General information about how the public will be warned and, if necessary, informed of the appropriate behaviour in the event of a major accident should be made available on the Public Information IT platform hosted on the HSE website (COMAH Regulation 17).

Enforcement Expectations

25. Inspectors should use the Enforcement Management Model (EMM) (see Annex 1 supporting information 6), including assessment of factors that are specific to the COMAH operator, to inform their regulatory decisions. Indicative CA actions are linked to success criteria and performance ratings in Table 1 (below) but these are generic and do not take precedence over EMM outcomes that are arrived at by consideration of the specific circumstances found by inspectors.
26. For any COMAH enclaves on GB nuclear licensed sites, the ONR EMM will need to be applied to the enforcement decision-making process. This allows any potential impact on nuclear safety risks arising to be considered and assessed alongside COMAH risks, ensuring enforcement decisions take into account the totality of the risks presented by nuclear licensed sites. ONR's EMM has been developed to ensure consistency of approach with HSE's EMM.
27. If using EMM to guide enforcement on environment matters then events with MATTE potential should be considered equivalent to "Serious personal injury" in terms of EMM guidance.
28. Ratings given under the original internal emergency planning DG remain valid, but may be updated to reflect findings from inspections under this DG.

Table 1 Performance rating and indicative CA action

TOPIC PERFORMANCE SCORE					
60	50	40	30	20	10
Unacceptable	Very Poor	Poor	Broadly Compliant	Fully Compliant	Exemplary
Unacceptably far below relevant minimum legal requirements.	Substantially below the relevant minimum legal requirements.	Below the relevant minimum legal requirements.	Meets most of the relevant minimum legal requirements.	Meets the relevant minimum legal requirements.	Exceeds the relevant minimal legal requirements.
Most success criteria are not met.	Many success criteria are not fully met.	Several success criteria are not fully met.	Most success criteria are fully met.	All success criteria are fully met.	All success criteria are fully met.
Degree of non-compliance extreme and widespread.	Degree of non-compliance either extreme or widespread.	Degree of non-compliance either significant, or not easily remedied.	Degree of non-compliance minor and easily remedied.	No evidence seen of non-compliance.	Actively seek to further improve standards.
Failure to recognise issues and their significance, and to demonstrate adequate commitment to take remedial action.	Failures not recognised, with limited commitment to take remedial action.	Limited recognition of the essential relevant components of effective safety and environment management, but demonstrate commitment to take remedial action.	Management recognise essential relevant components of effective safety and environment management, and commitment to improve standards.	Management competent and able to demonstrate adequate identification of the principal risks, implementation of the necessary control measures, confirmation that these are used effectively; and subject to review.	Management competent, enthusiastic, and proactive in devising and implementing effective safety and environment management systems to 'good practice' or above standard.
INDICATIVE CA ACTION					
Prosecution / Enforcement Notice.*	Enforcement Notice* / Letter.	Enforcement Notice* / Letter.	Letter / Verbal warning.	None.	None.

*Regulation 27 of COMAH extends certain Health and Safety at Work Act 1974 (HSWA) powers to persons authorised by section 108(1) of the Environment Act 1995. This has the effect of permitting agency officers to carry out certain functions that they would not otherwise be able to do. Authorised persons may issue Prohibition Notices (PNs) under Regulation 23 of COMAH, and Improvement Notices (INs) under section 21 of HSWA but insofar as the IN cites a breach of COMAH only. Agency authorised persons do not have powers to serve INs under s21 for breaches of other legislation at COMAH establishments, nor can they serve PNs under HSWA s22. Agency officers do have powers to enforce under other environmental legislation.

Dependencies and associations

29. This DG cross-refers to the COMAH CA DG for the inspection of external emergency planning (see Annex 1 supporting information 7). It also has relevance to flood preparedness (see Annex 1 supporting information 8).
30. UT establishment safety reports should contain the predictive information necessary for informing the nature, detail, and extent of an IntEP. The IntEP needs to dovetail with external emergency plans to ensure continuity across the emergency arrangements in place. Criteria for the assessment of emergency planning aspects of a safety report is contained in the CA's COMAH 2015 Safety Report Assessment Manual (predictive criteria – section 10; emergency response criteria - section 14, see Annex 1 supporting information 9).

Communicating and recording outcomes

31. When the inspection is complete (including review and analysis of any further information requested), performance ratings should be assigned based on Table 1 descriptions above and recorded on the appropriate COIN IRF Tab of the open COMAH Intervention Plan Service Order.

COIN work recording

32. To enable collection and analysis of inspection work the keyword IntEP (containing no spaces), should be included in the Notes “Summary” field relating to the intervention record on COIN. A paragraph of supporting information should also be included in the Notes “Details” field.

Business unit (BU)	Work Desc	Activity	Type
COMAH	Company	Regulating	Case (e.g. Enforcement /Investigation) Intervention plan Service Order

Annex 1 Supporting information

1. CA guidance for inspectors on emergency arrangements for COMAH establishments: Annex 4 checklist for verifying the contents of an onsite emergency plan. <http://www.hse.gov.uk/comah/inspectors-emergency-arrangements-comah-establishments.pdf>
2. Process Safety Leadership Group final report. Safety and environmental standards for fuel storage sites, Appendix 6: Emergency planning guidance. Including:
 - Table 20-Overview of emergency arrangements (onsite emergency plan template);
 - Table 21- Hazardous events: A sample of major accident scenarios; Table 22- Information needs of the emergency services;
 - Table 23- Assessment of vulnerable emergency response equipment and resources. www.hse.gov.uk/comah/buncefield/fuel-storage-sites.pdf
3. L111 - A guide to the Control of Major Accident Hazards Regulations 2015 www.hse.gov.uk/pubns/books/l111.htm
4. HSE publication HSG 191 Emergency planning for major accidents: para 78-100 onsite emergency plans, para 175-195 training and testing, para 196-199 initiation of emergency plan. <http://www.hse.gov.uk/pubns/books/hsg191.htm>
5. HID Instruction: Assessment of Key Performance Indicators During Inspection / Investigation. <http://www.hse.gov.uk/comah/hid-kpi-delivery-guide.pdf>
6. Enforcement Management Model (EMM) www.hse.gov.uk/enforce/emm.pdf:
[ONR Enforcement Management Model \(ONR EMM\) http://www.onr.org.uk/](http://www.onr.org.uk/ONR-Enforcement-Management-Model-(ONR-EMM))
7. COMAH CA External emergency planning delivery guide (in preparation)
8. COMAH CA Operational Delivery Guide: Inspection of COMAH operator flood preparedness. (<http://www.hse.gov.uk/comah/guidance/delivery-guide-flood-preparedness.pdf>)
9. HSE safety report assessment manual - <http://www.hse.gov.uk/comah/ca-guides.htm#sram>- Appendix 13 (13.11-13.15) environmental aspects and Appendix 14 emergency response aspects of safety report assessment.
10. Human factors toolkit; Section 5, topic 1 emergency response. <http://www.hse.gov.uk/humanfactors/toolkit.htm>

Annex 2 Core intervention issues and key questions for inspecting internal emergency planning

1. Representative scenarios

The emergency plan should be based on all *reasonably foreseeable emergency scenarios arising out of credible major hazard incidents*

- **Upper-tier sites:** these should be identified in the safety report.
- **Lower-tier sites:** The MAPP requires a risk assessment to identify likely major accidents.

Expectation and issues	Key questions
<p>Operator has considered the representative set of major accidents and identified the equipment, plant, resources and procedures required for mitigation.</p> <p>Procedures are able to deal with escalation of incident and are clear as to when to call the emergency services or initiate the external plan.</p> <p>For upper tier establishments see SRAM/ER/Appendix 14.2 Organisation of alert and intervention</p>	<p>What analysis has been done? For example, assessment of the scale of each scenario and therefore the nature and quantity of resource required, adequate identification where offsite resource is required to assist with on-site incident</p> <p>What standards and guidance have been used by the operator (for example, trade association and manufacturers guidance) to decide on the mitigation measures needed?</p> <p>What key measures have been taken e.g. for firefighting, PPE, toxic refuges, spillage and fire-fighting water retention etc.?</p> <p>Do staff have clear criteria and proper authority to make this decision? (note - this is a key area and problems often occur)</p>

2. Command and Control

Maintaining control in an emergency is complex and the clear allocation of responsibilities to key people with appropriate authority and ability is critical to a plan's successful deployment.

Expectation and issues	Key questions
<p>There is a clear chain of command to deal with emergency situations.</p> <p>Roles and responsibilities are clear for those with a part to play in the plan. The plan will normally identify a site main controller and incident controller.</p> <p>Deputising arrangements and call out rotas are clearly identified, as are provisions for handling situations that may arise out of hours.</p> <p>There are arrangements for accounting for all personnel and their safe evacuation, if appropriate.</p>	<p>Where sites are unmanned (e.g. out of hours), how does the emergency plan deal with this?</p> <p>Inspectors should give attention to how the plan deals with situations where the emergency services arrive first.</p> <p>Do responsible personnel have the authority to shut down plant and processes?</p>

3. Training and testing

Training, testing and learning from experience are essential components in achieving a competent emergency response.

Expectation and issues

Those involved in the plan have the necessary skills and technical knowledge.

Members of the emergency response team know what foreseeable scenarios they are likely to encounter and what actions are necessary to bring them under control.

Clear and well-rehearsed procedures are demonstrated at all levels (plant, site and off-site) covering all expected scenarios using a range of exercises.

Realistic training and practice drills are scheduled to ensure everyone receives them and with sufficient frequency to ensure response requirements for embedded.

Off-site prevention and recovery activities should be included in emergency exercises, including the involvement of any third-party responders where applicable. Exercises should also test local or national mutual aid arrangements relevant to the site and scenario being tested.

Key questions

Is there an on-going training programme?

Does the training programme cover all key issues? Where reliance on offsite resource/ local F&RS to assist with onsite incident, have the adequacy of the joint arrangements been tested?

Does the training programme include specific training for relevant pollution prevention activities, particularly those that could escalate to a MATTE? Can the competence of third party responders be assured (e.g. through membership of a scheme such as UK Spill)?

Is there evidence in training records or by discussions with staff that realistic training has been received?

Is there routine testing of all key elements of the emergency plan?

Following any test of the plan:

- Is there a review/debriefing for how effectively it was implemented, and to identify any "lessons learnt"?
- Are any improvements identified integrated into a revised plan?

Have off-site mitigatory aspects of the emergency plan been tested? (including relevance of exercise to scenarios at site)

4. Arrangements for providing assistance with mitigatory action outside the establishment

Operator actions outside the establishment, including mitigation, clean-up, and restoration/recovery of the environment.

Expectation and issues	Key questions
<p>Operators have plans in place to ensure any off-site impacts are correctly managed. Mitigation should be based on the predicted consequences of foreseeable Major Accident scenarios.</p> <p>Key plan scenarios should demonstrate appropriate integration with any plans of the designated authorities to prevent conflicting actions when plans are enacted i.e. a suggestion to use foam to fight a fire in one plan and an action not to use foam in another for the same area of an establishment. Where relevant align with the principles, models and guidance of JESIP (Joint Emergency Services Interoperability Programme). http://www.jesip.org.uk/home</p> <p>Plans should cover the on-site and off-site resources an operator can mobilise to protect and assist with mitigating worst case consequences for people and the environment offsite. This should include the involvement of any 3rd party responders, local and national mutual aid arrangements and should extend to the longer term anticipated recovery actions.</p>	<p>Do emergency plans cover specific activities based on the Major Accident Scenarios, including monitoring and mitigating any environmental harm?</p> <p>How do these align with the other designated authority emergency response plans and generic plans that exist under the Civil Contingencies Act?</p> <p>Is there evidence of method statements and risk assessment for expected recovery activities?</p> <p>Where environmental harm might occur (including leaks to ground and groundwater), plans should include appropriate and site-specific trigger points on which to initiate the IntEP and ExtEP. This should be for chronic and acute events and include measures to monitor and minimise environmental harm at predicted vulnerable locations surrounding the establishment.</p> <p>Plans also need to cope with dynamic elements such as re-evaluation of tactics in the case of unexpected consequences.</p> <p>Has a plan been developed detailing specific tasks to minimise environmental impact (e.g. establishing temporary containment or booming of a river) that identifies available equipment, suitable locations, and roles and responsibilities for deployment? Is there a post incident groundwater monitoring strategy where relevant?</p> <p>Does the plan address suitable management and disposal of wastes, including hazardous waste (some hazardous waste could be dangerous substances under COMAH)?</p> <p>If using third party responders, have the necessary contractual arrangements been put in place to enable a 24/7 response capability? Do third party spill responders know what foreseeable scenarios they are likely to encounter, the predicted consequences, and therefore the equipment and resource requirements, and have they contributed to development of plans for mitigation?</p>

5. Communication, Coordination and information handling

Communication & coordination during an emergency is vital. "Lessons learnt" studies have shown that communication and effective information handling between the operator and the emergency services are critical in determining success or not of an emergency response. Speed is a key factor.

Expectation and issues

There are specific emergency procedures for each process setting out the key information for major accident scenarios i.e. potential consequences in different weather conditions; names, properties, quantities and locations of dangerous substances; location of likely major accidents on plant; emergency actions etc.

The essential components of the internal and external emergency plans should dovetail together.

There are planned interfaces between operators and emergency responders on-site (including alert / call out and liaison during a response).

There are efficient means of information handling between all parties and the emergency control centre on site.

There are means of raising the alarm for different scenarios e.g. toxic gas release, ecotox spillage or a fire.

Key questions

Have the F&RS been involved in preparation of pre-incident plans for key scenarios?

Key interface areas between the IntEP and ExtEP:

Has the operator consulted with the designated authorities about the internal emergency plan and the information needed during an emergency?

Are their arrangements for initiating the plan and alerting/cascading essential information about a developing or actual major accident to the appropriate designated authorities so they can put their plans into action?

Are the designated authorities aware of early warning arrangements, establishment layout, and key information such as access arrangements, rendezvous points, on-site emergency response facilities, and their vulnerability?

How do those with key roles to play during an emergency response (e.g. site main and incident controllers at Upper tier sites) share a common picture of the developing emergency (e.g. use of aids such as white boards)?

Are all communication links tested routinely to ensure that they will work in an emergency (e.g. radios etc during a realistic test)?

Annex 3: Examples of Key Performance Indicators to monitor the effectiveness of internal emergency response

Desired safety outcome:

- That the impact of a major incident is minimised.

Monitoring the planned internal emergency response:

The following indicators can be used both in a 'testing' scenario, or for real. This is not an exhaustive list.

Possible lagging indicators:

- Metrics that measure whether elements of the emergency procedure have failed to function to the desired performance standard.

Possible leading indicators:

- Metrics measuring the following:
 - whether staff/contractors/emergency response personnel take the correct action in the event of an emergency or during an exercise;
 - whether emergency plan tests are carried out on time;
 - whether personnel in key emergency response roles meet defined competency criteria (e.g. have participated in emergency exercises and/or received necessary training).

Possible linked leading and lagging indicators (dual assurance):

- Metrics measuring whether maintenance, inspection and testing of emergency equipment has been carried out (leading indicators), along with metrics measuring instances where emergency equipment under test has failed to function to desired performance standards (lagging indicators).