



National
Operational
Guidance

Guidance

Environmental protection



NFCC
National Fire
Chiefs Council

Developed and maintained by the NFCC



Contents

- Introduction 3
 - Environmental responsibilities* 3
 - Environmental legislation* 4
 - Fire and rescue service legislation* 6
 - Responsibility of fire and rescue services* 6
 - Working with environmental agencies* 7
 - Responsibilities for motorways and highways* 7
 - Terminology of National Operational Guidance* 8
- Hazard - Polluting materials 9
 - Control measure - Risk management: Environmental risks* 10
 - Control measure - Risk assessment at an incident: Environmental risks* 11
 - Control measure - Specialist advice: Environmental protection* 14
 - Control measure - Specialist resources: Environmental protection* 15
 - Control measure - Containment of polluting materials* 18
 - Control measure - Dilution of polluting materials* 20
 - Control measure - Absorption of polluting materials* 22
 - Control measure - Treatment of polluting materials* 23
 - Control measure - Transportation of polluting materials* 24
 - Control measure - Disposal of polluting materials* 26
 - Control measure - Decontamination: Polluting materials* 28
- Hazard - Polluting materials: Fire-related incidents 29
 - Control measure - Control the environmental impacts of fire-related incidents* 31
 - Control measure - Recycling or reduction of fire water run-off* 34
 - Control measure - Use, containment and substitution of firefighting foam* 37
 - Control measure - Controlled burning: Environmental considerations* 39
 - Control measure - Air quality cell function* 42
- Hazard - Physical damage to the environment 43
 - Control measure - Minimise physical damage to the environment* 44
- Hazard - Biosecurity 46
 - Control measure - Specialist advice: Biosecurity* 47
 - Control measure - Clean equipment, vehicles, clothing and personal protective equipment to maintain biosecurity* 48
- Hazard - Leaks from high pressure oil pipelines 49
 - Control measure - Environmental protection response to leaks from high pressure oil pipelines* 50



Introduction

The highest priority for fire and rescue services at an incident will always be the safety of the public, personnel and other emergency responders. They must also consider potential damage to the environment, whether caused by the incident or the response to it.

Effective and informed action, taken by personnel or other emergency responders, can reduce the environmental impact of incidents and protect public safety. This guidance sets out the hazards that may be encountered and the control measures that should be considered to protect the environment. It does not provide information on the specific risks from hazardous materials, which can be found in the [Hazardous materials](#) guidance.

This guidance is supported by the [Foundation for environmental protection](#), which was jointly produced by the environmental agencies and the National Fire Chiefs Council (NFCC).



Environmental responsibilities

Responsibility for protecting the environment in the UK rests with a number of organisations including:

- [Environment Agency](#) in England
- [Natural Resources Wales](#)
- [Scottish Environment Protection Agency](#)
- [Northern Ireland Environment Agency](#)

Each has similar duties and powers to protect and improve the environment, with some differences in their responsibilities. The term 'environmental agencies' is used in this guidance to refer to these organisations.

Nature conservation bodies are the enforcing authority for open land, such as sites of special scientific interest (SSSI), specific areas of conservation and special protection areas. These bodies include:

- [Natural England](#)
- [NatureScot](#)
- [Natural Resources Wales](#)

- [Northern Ireland Environment Agency](#)

The [Maritime and Coastguard Agency](#) (MCA) is responsible for pollution from shipping and offshore installations, such as oil rigs. The Secretary of State has the power to extend marine responsibilities if it is considered to be in the national interest. For more information refer to [Foundation for the environment - Marine incidents](#).

Local authorities have environmental responsibilities, including the impact of smoke from a fire and vehicle emissions. They deal with complaints related to noise, litter and odour for sites not regulated by environmental agencies and most fly-tipping incidents. For more information refer to [Foundation for the environment - Role of local authorities](#).



Environmental legislation

Environmental damage

Under the following regulations, fire and rescue services must take steps to prevent or reduce environmental damage:

- [Environmental Damage \(Prevention and Remediation\) \(England\) Regulations](#)
- [Environmental Damage \(Prevention and Remediation\) \(Wales\) Regulations](#)
- [The Environment Liability \(Scotland\) Amendment Regulations](#)
- [The Environmental Liability \(Prevention and Remediation\) Regulations \(Northern Ireland\)](#)

They must notify the appropriate regulatory authority or organisation of:

- Damage to a site of special scientific interest (SSSI)
- Damage to species and habitats outside SSSIs
- Serious long-term damage to ground or surface water that results in a decline in water status under:
 - [The Water Environment \(Water Framework Directive\) \(England and Wales\) Regulations](#)
 - [Water Environment and Water Services \(Scotland\) Act](#)
 - [The Water Environment \(Water Framework Directive\) Regulations \(Northern Ireland\)](#)
- Contamination of land by substances or organisms that cause significant risk to human health

For more information refer to [Foundation for environmental protection - Fire and rescue services acts and orders](#).

Pollution to ground or surface waters

Under the following regulations, it is an offence to cause or knowingly permit the release of pollution to ground or surface waters. Causing pollution must involve an active operation, or the failure to take action. To knowingly permit involves the failure to prevent pollution, where there is knowledge of it occurring. In Northern Ireland there is no differentiation between a person committing an offence, knowingly or otherwise.

These offences apply unless the release is allowed by [an environmental permit](#) or exemption under:

- [The Environmental Permitting \(England and Wales\) Regulations](#)
- [The Environmental Authorisations \(Scotland\) Regulations](#)

Similar regulations are under development in Northern Ireland; in the meantime separate legislation applies, including [The Water \(Northern Ireland\) Order](#) regarding discharge consents and water pollution enforcement, and the [Environmental Better Regulation Act \(Northern Ireland\)](#).

Defence for exceptional circumstances

In normal circumstances there is no defence against a breach of regulations. However, there is a defence for fire and rescue service actions taken in exceptional circumstances to avoid danger to human health. As the criteria vary for each country's regulations, detailed information is provided at [Foundation for environmental protection – Legal defences: pollution](#).

Prevention and remediation

The regulatory authority or organisation may require fire and rescue services to carry out preventive and remediation measures. It may also be necessary to pay costs for any environmental damage caused. For protected sites and species, a fire and rescue service may be liable if damage is deliberate or caused by negligence.

It is an offence to release polluting material into a sewer without having consent from the sewerage undertaker. Sewerage undertakers must be informed when accidental releases occur. For more information refer to:

- [Foundation for environmental protection - Protecting sewerage and drainage](#)
- [Protocol for the disposal of contaminated water and associated wastes at incidents](#)

Associated legislation

- [The Control of Major Accident Hazards Regulations](#)
- [Radioactive Substances Act](#)
- [The Hazardous Waste \(England and Wales\) Regulations](#)



- [The Waste \(England and Wales\) Regulations](#)
- [Water Industry Act](#)
- [The Water Environment \(Controlled Activities\) \(Scotland\) Regulations](#)
- [Sewerage \(Scotland\) Act](#)
- [The Special Waste \(Scotland\) Regulations](#)
- [The Environmental Liability \(Scotland\) Regulations](#)
- [The Water \(Northern Ireland\) Order](#)
- [The Water and Sewerage Services \(Northern Ireland\) Order](#)
- [Groundwater Regulations \(Northern Ireland\)](#)



Fire and rescue service legislation

Key legislation for incident command is provided in [Incident command - Legislation](#). Fire and rescue services must also be aware of their responsibilities under other relevant legislation that considers the environment.

[The Fire and Rescue Services \(Emergencies\) \(England\) Order](#): The Order places a duty on fire and rescue services in England to have the capability to remove chemical, biological, radiological, nuclear and explosive contaminants from people at an emergency. There is also a duty to contain water used for decontamination for a reasonable time. Fire and rescue services must take steps to prevent or limit environmental damage when decontaminating people.

[The Fire \(Additional Function\) \(Scotland\) Order](#) places a similar duty on the Scottish Fire and Rescue Service, as does [The Fire and Rescue Services \(Emergencies\) \(Wales\) Order](#) and [The Fire and Rescue Services \(Emergencies\) \(Wales\) \(Amendment\) Order](#) in Wales, and [The Fire and Rescue Services \(Emergencies\) Order \(Northern Ireland\)](#) in Northern Ireland. For more information refer to [Foundation for environmental protection - The fire and rescue services emergency or additional function orders](#).

[Civil Contingencies Act](#): As Category 1 responders, fire and rescue services are part of the multi-agency response to civil emergencies. The role of the fire and rescue service under the act is to save life, and to protect property and the environment. To be an 'environmental emergency', an incident must be one of the following:

- Contamination of land, water or air with a harmful biological, chemical or radioactive substance
- Flooding
- Disruption or destruction to plant life or animal life



Responsibility of fire and rescue services

Fire and rescue services are responsible, under legislation and regulations, for developing policies and procedures and to provide information, instruction, training and supervision to their personnel about foreseeable hazards and the control measures used to reduce the risks arising from those hazards.

This guidance sets out to provide fire and rescue services with sufficient knowledge about the potential hazards their personnel could encounter when attending incidents. Fire and rescue services should ensure their policies, procedures and training cover all of the hazards and control measures contained within this guidance.



Working with environmental agencies

Partnerships between environmental agencies and fire and rescue services are a key part of any strategy to control pollution. This approach is underpinned by national working agreements, memoranda of understanding (MoUs) and local working agreements.

For more information about the responsibilities of environmental agencies refer to Foundation for environmental protection:

- [The water environment](#)
- [Fisheries, recreation and conservation](#)
- [Pollution prevention and legal controls](#)

Fire and rescue services must have systems to advise environmental agencies when there is potential for pollution, or when pollution has occurred. For more information refer to [Foundation for environmental protection - Incident reporting to environment agencies](#).

When informed of an incident, environmental agencies will first provide remote advice or assistance. For more information about their response refer to [Foundation for environmental protection - Environmental agencies' response to incidents](#).



Responsibilities for motorways and highways

The overall responsibility for managing motorways and trunk roads lies with the relevant highways agency. Some roads are managed by private companies, and other 'A' roads and all minor roads are managed by local authorities.

A reduced level of pollution control and response exists for locally maintained road infrastructure, and in most cases local authorities can be contacted to obtain pollution control information.

For more information refer to [Foundation for environmental protection - Motorway and highway drainage](#).



Terminology of National Operational Guidance

National Operational Guidance uses strategic actions to assist services in identifying actions that will help them meet their legislative requirements and record them using the Strategic Gap Analysis tool.

The guidance aims to provide its users with a clear understanding of what must be done, their absolute duties, what should be done and what may be done. It uses lead sentences such as 'Fire and rescue services must' and 'Fire and rescue services should'.

The following definitions have been applied to the National Operational Guidance:

'Must' – actions that are required by legislation. For example:

*An assessment **must** be carried out to identify whether the space is confined. Some spaces will become confined spaces because of the work to be carried out in them or because of changes in their use or changes to the level of enclosure.*

'Should' – actions that are recommended. If policies or procedures follow a different action, or do not include the recommended action, they are likely to attract criticism; this could be at managerial level or in a review process such as an inquest. For example:

*A face mask fit test **should** be carried out as part of the initial selection of the respiratory protective equipment, and it is good practice to ensure testing is repeated on a regular basis.*



'May', 'can' or 'could' – used when an action does not fall into either of the categories above, but is considered to be an appropriate method of controlling or eliminating the hazard. For example:

At incidents that involve working at height there may be instances where the incident commander cannot observe all areas of the incident, and may not initially have enough information to maintain situational awareness.



Hazard - Polluting materials

Hazard Knowledge

[This hazard should be read in conjunction with Foundation for environmental protection - Pollutant categories](#)

Polluting materials may affect the environment during or following incidents. Fire and rescue service actions may result in or increase pollution, for example, if fires are extinguished without applying appropriate control measures to contain fire water or firefighting foam run-off.

There may be sites in a fire and rescue service area where polluting materials are known to be stored, or are likely to be found.

The following table shows some types of incidents and activities, with examples of polluting materials commonly associated with them:

Type of incident or activity	Examples of polluting materials
Road traffic collisions	Oils, fuel, coolants, battery vapours or wash water
Spillages of non-hazardous materials	Organic matter, such as: <ul style="list-style-type: none"> • Food or drink • Diesel exhaust fluid, often referred to as AdBlue • Organic liquid fertiliser
Spillages of hazardous materials	Corrosive, toxic, or flammable materials
Casualty care	Clinical waste, disposable gloves, medical face masks or dressings



Fires	Fire water run-off, smoke plumes, hazardous materials or foam (included in Polluting materials: Fire-related incidents)
Incidents involving contaminating materials	Biological, chemical or radioactive materials
Working on, in or near water	Biological hazards, such as infectious diseases or sewage Biodiversity, such as invasive non-native species

Any incident may result in contaminated personal protective equipment (PPE) or operational equipment. There is no defence under environmental regulations if pollution of the environment is caused by decontamination of PPE, equipment or body bags.

People can be exposed to polluting materials through inhalation, absorption, ingestion or injection. For more information refer to [Operations – Infectious diseases](#).



Control measure - Risk management: Environmental risks

Control measure knowledge

Fire and rescue service risk management plans should consider environmental risk from polluting materials to the built or natural environment.

Planning may be supported through joint working with environmental agencies, to identify sites of risk and determine suitable response measures. This becomes essential when planning for sites that pose a high risk to the environment, for example where an incident could contaminate water supplies. This should be reflected in the environmental protection section of their risk management plans. For more information refer to [Foundation for environmental protection - Fire and rescue service roles and responsibilities in pollution intervention planning](#).

Sites that have an environmental permit are required by environmental agencies to prepare accident plans. For high-risk sites that do not have environmental permits, fire and rescue services and environmental agencies should jointly carry out visits and inspections and share information

about the potential hazards. For more information refer to [Foundation for environmental protection - Roles and responsibilities in pollution intervention planning: Site operators](#).

Some sites may be subject to the gathering of Site-Specific Risk Information (SSRI). For more information refer to:

- [Corporate guidance for operational activity – Site-Specific Risk Information](#)
- [Foundation for environmental protection - Site-specific risk identification and planning](#)

Fire and rescue services should work with environmental agencies and other organisations to prepare Flood Risk Assessments. For more information refer to [Geophysical hazards – Emergency response plans: Flooding](#).

Operational risk information plans should include information on pollution, prevention and control if a risk to the environment is identified. For more information refer to [Foundation for environmental protection - Using an environmental risk assessment to inform operational risk information plans](#).

Evaluating the success of the measures covered by risk information and plans, and updating them based on learning from incidents, will ensure that these plans remain effective. If relevant, this information should be shared regionally or nationally. For more information refer to [Corporate guidance for operational activity - Operational learning](#).

Strategic actions

Fire and rescue services should:

- Include environmental risk information within operational risk management plans
- Carry out joint visits and inspections of high-risk sites with environmental agencies and share information about potential hazards

Tactical actions

Incident commanders should:

- Consider pollution prevention information contained in risk information
- Implement the environmental protection measures identified in operational risk information



Control measure - Risk assessment at an incident: Environmental risks

Control measure knowledge

In normal circumstances there is no defence against a breach of environmental protection legislation or regulations. However, a risk assessment must prioritise human health, and for this reason exemptions are provided. For more information refer to [Foundation for environmental protection – Legal defences: pollution](#).

Environmental risk assessments should identify and consider all routes that may allow polluting materials to impact the environment. A [national environmental risk assessment template](#) has been prepared to help personnel to complete an environmental risk assessment. There are two approaches available to carry out the assessment based on the scale of the incident:

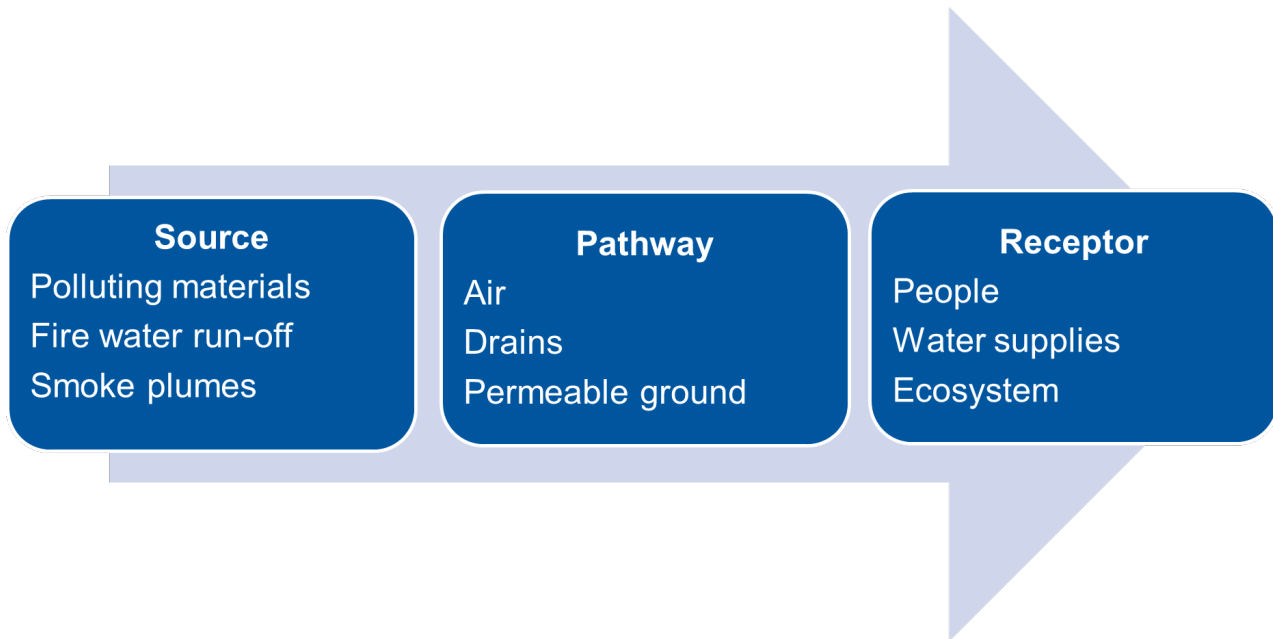
- For smaller incidents, the environmental risk assessment may be included as part of a dynamic risk assessment and recorded following service protocols
- For larger, more protracted incidents or if a known risk to the environment has been identified, a formal environmental analytical risk assessment should be completed and recorded

After completing the appropriate assessment, any identified or suspected risk to the environment should be communicated to the fire control room, those attending the incident, and other organisations if appropriate. For more information refer to [Foundation for environmental protection – Operational environmental risk assessments](#).

Throughout and after the incident, there should be monitoring and reviews of the environmental impact of fire and rescue service activity.

Source, pathway, receptor model

Applying a source, pathway, receptor model may help to control and reduce the risks of pollution. The first action is to identify the source of hazards to the environment. When a hazard is identified, measures should be taken to prevent or reduce the risk of pollutants reaching vulnerable receptors in the environment via a pathway.



Strategic actions

Fire and rescue services should:

- Have systems and methods in place to support the carrying out, sharing and recording of environmental risk assessments in line with other risk assessment methods

Tactical actions

Incident commanders must:

- Carry out a risk assessment that prioritises human health, by applying the exemptions provided under environmental protection legislation and regulations

Incident commanders should:

- Determine which environmental risk assessment approach is required
- Appropriately include, complete and record an environmental risk assessment
- Ensure identified or suspected risks to the environment are communicated to the fire control room, those attending the incident, and other organisations if appropriate
- Monitor and review the environmental impact of fire and rescue service activity throughout

and after the incident

- Apply a source, pathway, receptor model to control and reduce the risks of pollution



Control measure - Specialist advice: Environmental protection

Control measure knowledge

Specialist advice may be required to inform the tactical plan if an incident, or the operational response to it, has the potential to pollute the environment. Sources of specialist advice can include:

- Hazardous materials advisers (HMAs)
- Environmental agencies
- Scientific advisers
- External operational advisers

An on-site responsible person, such as a chemical supplier or engineer, may be able to provide specialist advice on the products or processes in use.

If specialist advisers are unavailable, it may be possible to obtain advice from other sources, such as the [Chemsafe](#) service provided by the National Chemical Emergency Centre (NCEC).

Details of the specialist advice received should be recorded, including who gave the advice and what actions were taken, based on the information provided.

Strategic actions

Fire and rescue services should:

- Consider alerting a hazardous materials adviser about incidents with the potential to pollute the environment
- Maintain a directory of contact details for specialist environmental protection advisers

- Secure access to the Chemsafe service provided by the National Chemical Emergency Centre (NCEC)

Tactical actions

Incident commanders should:

- Consider requesting appropriate specialist advice for incidents with the potential to pollute the environment
- Record details of the specialist advice received, who provided it, and what actions were taken based on the information provided



Control measure - Specialist resources: Environmental protection

Control measure knowledge

In addition to the environmental protection resources held by fire and rescue services, specialist resources may also be available from partner agencies and other external specialists.

Fire and rescue services should liaise and establish local working arrangements with other responders. If possible, these should be developed regionally to promote interoperability and intraoperability. Joint working arrangements should be negotiated, monitored and regularly updated. They may be reinforced by the use of joint training and exercises.

Hazardous materials advisers

Fire and rescue service hazardous materials advisers (HMAs) should have received appropriate training for incidents involving hazardous materials and environmental hazards, including for larger-scale incidents. They may be deployed at an incident to monitor or manage environmental protection activities; this may be especially beneficial at multi-agency incidents where specialist resources are in use. For more information refer to [Foundation for environmental protection – Training for environmental protection](#).

Fire and rescue service resources

Fire and rescue service resources should primarily be used for immediate pollution control, rather than for cleaning up. In addition to the grab packs carried on front line appliances, environmental protection units (EPUs) may be provided as part of agreements between the fire and rescue service and environmental agencies. An EPU is a vehicle or demountable unit used to transport specialist equipment and materials to the incident scene.

A standard list of equipment for grab packs and EPUs is provided in the [Foundation for environmental protection – Environmental protection: Operational strategies, techniques and equipment](#).

Pollution control equipment and materials supplied by environmental agencies should be risk assessed, tested periodically and regularly maintained.

The use of detection, identification and monitoring (DIM) equipment may be beneficial, or sometimes essential, when protecting the environment from harm. Some fire and rescue services have access to their own scientific support. If not, this can be requested from a neighbouring fire and rescue service through their fire control room.

Partner agencies

The involvement of partner agencies, and deployment of their specialist equipment, should be considered in the early stages of an incident to protect the environment. Specialist equipment includes that from:

- Environmental agencies:
 - Specialist pumps
 - Containment equipment
 - Substance identification
 - Equipment for confined space operations
 - Water aeration equipment
- Highways agencies:
 - Equipment carried in traffic officer vehicles
 - Response units with containment and cleaning equipment
- Local authorities:
 - Containment equipment, often carried on traffic management vehicles
 - Gully suckers
- Water and sewerage undertakers:
 - Containment equipment

The nature of the incident, especially if illegal activity is suspected, may determine the need for police assistance. Fire and rescue services may choose to deploy a National Inter-agency Liaison

Officer (NILO) to this type of incident. The police may need to take action prior to the arrival of an environmental officer, or carry out investigations. For more information refer to [Operations - Conduct or support investigations](#).

External specialist resources

A wide range of external specialists may be able to provide environmental protection assistance. This includes private companies that specialise in the clean-up and transportation of hazardous waste. If external specialists may be required, an early request should be made as their response time may be extended.

The external specialist resources requested should be appropriate for the type, size and complexity of the incident.

Cost recovery

As the use of environmental protection resources will attract a cost, consideration should be given as to who will be financially liable. As this usually follows the 'polluter pays' principle, the fire and rescue service should attempt to obtain details of the polluter.

Strategic actions

Fire and rescue services should:

- Identify or develop personnel for the specialist role of hazardous material advisers
- Establish joint working arrangements with specialist environmental protection resources
- Consider participating in joint training and exercises to ensure relevant personnel have an understanding of multi-agency working arrangements for environmental protection
- Maintain a directory of specialist environmental protection resources

Tactical actions

Incident commanders should:

- Consider deploying a hazardous materials adviser to monitor or manage environmental protection activities

- Consider requesting specialist resources from own or neighbouring fire and rescue services, or partner agencies for environmental protection
- Consider requesting appropriate external specialist environmental protection resources
- Attempt to obtain details of the polluter for cost recovery purposes if environmental protection resources are used



Control measure - Containment of polluting materials

Control measure knowledge

This control measure should be read in conjunction with [Foundation for environmental protection - Pollution control hierarchy and equipment](#).

If practical and safe to do, and unless there is a threat to life, containment is the preferred approach to manage incidents if polluting materials may harm the environment.

The following hierarchy of pollution control should be used in most instances when containing polluting materials, which can include contaminated fire water or firefighting foam run-off. The five stages of the hierarchy require a dynamic risk assessment to be undertaken within the parameters of an appropriate safe system of work, and appropriate personal protective equipment (PPE) to be worn.

- [Hierarchy Stage 1 – Contain at source](#): The most effective intervention is to stop a pollutant at source, such as the point where a pollutant is escaping from a container, tanker, pipework or other vessel
- [Hierarchy Stage 2 – Contain close to source](#): Where it is not possible or practicable to contain the product at source, or there has already been a significant loss of product, the next point of intervention is to contain the spillage as close to the source as possible, using items in the grab pack or other available materials, such as soil or sand
- [Hierarchy Stage 3 – Containment on the surface](#): One of the most common ways for a spillage to enter the ecosystem is via open drain gullies connected to the surface water drainage system. As the drainage system provides a very efficient pollution pathway, steps should be taken to prevent polluting materials from entering it.



- [Hierarchy Stage 4 – Contain in the drainage system](#): Pollutants often enter drainage systems before pollution control equipment can be deployed. If this happens, the drainage system itself can be used for containment. At other incidents, containment in the drainage system may be the preferred option, even if interventions can be made earlier, if it is the easiest and most effective way of containing pollutants. Being able to identify the drainage systems surrounding the incident is an important aspect of preventing environmental harm.
- [Hierarchy Stage 5 – Contain on or in the watercourse](#): Fire and rescue service activity for the emergency containment of pollutants on or in a watercourse will be limited by the equipment carried, the size of the body of water and the practical skills and knowledge of personnel.

Advice or assistance for containment should be requested from environmental agencies, hazardous materials advisers or other organisations if required. In some areas the environmental agencies have large volume pumps that can be used to support or replace fire and rescue service pumps.

It may be necessary to divert polluting materials, including fire water or firefighting foam run-off, to holding or sacrificial areas, for off-site containment. Foul sewerage systems can be used to contain polluting material, if approved by the sewerage undertaker and environmental agency. When doing so, care should be taken that pollutants and sewage do not escape from any storm overflows into the sewerage system. The contained pollutants and sewage may then be removed.

It may be possible to divert polluting materials to a local sewage treatment works, where they can be treated or contained before their disposal. Sewage treatment works have storm tanks that are used to store the large volumes of diluted sewage produced during high rainfall. Approval from the sewerage undertaker must be sought before diverting pollutants to a sewage treatment works; the treatment process can be affected if levels of pollution are too high and could result in the release of pollutants and untreated or partially treated sewage. For more information refer to [Foundation for environmental protection - Protecting sewerage and drainage](#).

Pollution control devices, such as drain closure valves, storage lagoons or balancing ponds are installed in some surface water drainage systems. These devices can be used to help contain polluting materials if permission is given by the appropriate authority; this could be a sewerage undertaker, responsible person, local authority or highways agency.

Strategic actions

Fire and rescue services should:

- Arrange access to, or obtain information from, local sewerage undertakers
- Consider providing equipment to support containment of polluting materials



- Maintain a directory of emergency contact details for organisations that may need to provide authority for the containment of polluting materials
- Maintain a directory of emergency contact details for sewerage undertakers for environmental protection incidents

Tactical actions

Incident commanders should:

- Consider the hierarchy of pollution control when it is necessary to contain polluting materials
- Use appropriate methods and equipment to contain polluting materials to minimise their impact on the environment
- Request advice or assistance for containment from environmental agencies, hazardous materials advisers, sewerage undertakers or other appropriate organisations
- Consider diverting polluting materials to holding or sacrificial areas for off-site containment, with appropriate approval
- Consider diverting polluting materials to local sewage treatment works for containment or treatment, with their approval
- Consider the availability and appropriate use of pollution control devices if permission can be obtained



Control measure - Dilution of polluting materials

Control measure knowledge

When dealing with domestic quantities of polluting materials, it may be appropriate to dilute them

with a sufficiently large volume of water if other control measures are unsuitable. High levels of dilution should ensure that pollutants have minimal impact on the environment. A risk assessment should be carried out before diluting polluting materials, which considers the pollutant type and quantity, and the nature of any receiving water system.

Approval should be obtained from the environmental agency or sewerage undertaker before diluting polluting materials, unless there is a threat to life. In such circumstances they should be informed as soon as is reasonably practicable.

Detergent or other cleaning products should not be added to polluting materials or spillages hosed to the drain without prior agreement by the appropriate environmental agency or sewerage undertaker.

Advice about dilution of polluting materials may need to be obtained from specialists, including a hazardous materials adviser (HMA), external specialist or the [Chemsafe](#) service provided by the National Chemical Emergency Centre (NCEC).

For more information refer to [Foundation for environmental protection - Additional pollution control techniques](#).

Strategic actions

Fire and rescue services should:

- Provide relevant personnel with access to information regarding sensitivity of watercourses, aquifers and other receptors

Tactical actions

Incident commanders should:

- Consider diluting domestic quantities of polluting materials with a sufficiently large volume of water if other control measures are unsuitable
- Carry out a risk assessment before diluting polluting materials, to consider the pollutant type and quantity, and the nature of any receiving water system



- Unless there is a threat to life, obtain approval from the relevant organisation before diluting polluting materials
- Avoid the use of detergents or cleaning products when diluting polluting materials, unless approved to do so by the relevant organisation
- Avoid diluted polluting materials reaching drains unless given permission to do so by the relevant organisation



Control measure - Absorption of polluting materials

Control measure knowledge

It may be appropriate to contain minor spillages by using absorbent materials, such as pads, sheets and booms. Soil, sand and cement all have absorbent qualities and can be used to create improvised containment barriers or bunds.

Polluting materials retain their hazardous properties when absorbed and this should be considered when handling any absorbed material. Absorbent materials should not be used for larger spillages, such as a road tanker incident, because of the amount of waste that will be created and the cost of its disposal.

Environmental agencies supply grab packs that contain resources such as oil absorbent pads and booms. These should be made available on fire and rescue service pumping appliances, high volume pumps (HVPs) and environmental protection units (EPUs).

The absorbent material waste should either be handed over to the responsible person, or arrangements made for its safe disposal.

The environmental agency officer should inform the responsible person about their responsibility to dispose of polluting materials, such as contaminated booms or pads, and cost recovery under the 'polluter pays' principle. If the environmental agency is not present, personnel may need to provide the responsible person with this information.

Strategic actions

Fire and rescue services should:

- Consider providing environmental agency grab packs on pumping appliances, high volume pumps and environmental protection units
- Have arrangements in place for the disposal of contaminated absorbents for incidents when the responsibility for waste disposal cannot be identified

Tactical actions

Incident commanders should:

- Determine if the polluting materials can be dealt with by using an appropriate type of absorbent materials
- Consider using the grab packs provided by an environmental agency or alternatives to absorb polluting materials
- Hand over the absorbent material waste to the responsible person, or make arrangements for its disposal
- Be prepared to provide the responsible person with information about the disposal of polluting materials and cost recovery, if the environmental agency is not present



Control measure - Treatment of polluting materials

Control measure knowledge

Aeration



Organic pollutants, such as milk and sewage, remove oxygen from bodies of water. Environmental agencies and specialist contractors can use aeration units or chemical methods to raise oxygen levels. Pumping the affected water into the air through hose jets is a less effective technique that can be used by fire and rescue services, preferably under the direction of the environmental agency.

Chemical treatment

An environmental agency or specialist contractor can employ specialised techniques to treat pollution in a watercourse, for example by using activated carbon or hydrogen peroxide. They may ask fire and rescue services to assist in the emergency phase of an incident where these techniques are employed.

Memoranda of understanding

The use of fire and rescue service resources to assist with the treatment of polluting materials should be subject to local agreements, which may be supported by memoranda of understanding (MoU) with the relevant environmental agencies and specialist contractors.

For more information refer to [Foundation for environmental protection - Additional pollution control techniques](#).

Strategic actions

Fire and rescue services should:

- Ensure relevant personnel understand what environmental protection activities will need to be delivered by an environmental agency or specialist contractor
- Consider establishing memoranda of understanding for assisting environmental agencies and specialist contractors with the treatment of polluting materials

Tactical actions

Incident commanders should:

- Assist environmental agencies and specialist contractors with the treatment of polluting materials in line with local agreements or in response to a time-critical situation



Control measure - Transportation of polluting materials

Control measure knowledge

There are strict controls on transporting hazardous waste. Fire and rescue services do have dispensation in exceptional, life-saving circumstances. For more information refer to:

- [Foundation for environmental protection – The movement of hazardous waste by the fire and rescue services in emergencies](#)
- [Foundation for environmental protection – Legal defences: Pollution](#)

If emergency transportation of hazardous waste is required, the relevant environmental agency should be informed as soon as possible. The environmental agency should also be involved in the decision made by the fire and rescue service to transport it.

Fire and rescue services are allowed to transport and store small quantities of non-hazardous waste from incidents; an appropriate option may be to register as a lower tier waste carrier. This activity should be supported by service procedures, including the use of personal protective equipment (PPE), such as disposable gloves or chemical protection suits. For more information refer to [Foundation for environmental protection – The movement and storage of non-hazardous waste](#).

Strategic actions

Fire and rescue services should:

- Be aware of their legal responsibilities and possible defences for the transportation of hazardous waste
- Provide PPE suitable for dealing with the transportation and storage of small quantities of non-hazardous waste

Tactical actions

Incident commanders should:

- Act within the legal exemptions if it is necessary to transport hazardous waste
- Consult with the relevant environmental agency if emergency transportation of hazardous waste is required
- Follow service procedures and use appropriate PPE for the transportation or storage of small quantities of non-hazardous waste



Control measure - Disposal of polluting materials

Control measure knowledge

The disposal of polluting materials, including fire water run-off, may be an appropriate action to take for an incident, especially if containment is not feasible. The method used for disposal will depend on the nature of the incident, the type and quantity of polluting materials and the resources available.

During the early stages of an incident, when activities to prevent harm or stop the incident developing are the priority, disposal to a foul sewer may be considered suitable, and is likely to be required for fire water run-off. However, this method may be appropriate for other polluting materials, such as chemically contaminated wash water, contaminated potable water or other spillages.

Failure to control the flow of polluting materials could result in them entering the water environment, or cause the foul sewer to overflow. If the foul sewerage system is considered the best option, the sewerage undertaker will need to be involved. They will consider the request and take into account the likely impact if they do not approve the discharge. Agreement from the appropriate environmental agency should be obtained before any release takes place; this may initially be obtained by telephone, which is later applied for and confirmed in writing.

Contaminated water can be taken away in tankers for disposal, which can reduce levels of pollution and debris. For more information refer to [Foundation for environmental protection - Additional pollution control techniques](#).

On-site arrangements may exist for the disposal of polluting materials at locations that pose a known risk to the environment. Site-Specific Risk Information (SSRI) should capture these planned



arrangements and inform fire and rescue service operational plans. It may be beneficial for fire and rescue services to participate in joint training and exercises at these sites.

An on-site emergency box could contain information about ground soakaways, stopcocks, pollution inspection points, retention ponds and other pollution control devices.

If the emergency phase of an incident has passed, the fire and rescue service may not be responsible for disposal of polluting materials. The environmental agency officer should inform the responsible person about their responsibility to contain, organise and remove waste, and cost recovery under the 'polluter pays' principle. If the environmental agency is not present, personnel may need to provide the responsible person with this information.

Local authorities are usually responsible for playing fields, open public spaces, beaches and minor roads. Landowners, owners or occupiers are usually responsible for private properties. Highways agencies are usually responsible for major roads.

For more information refer to:

- [Foundation for environmental protection - Clean up and waste disposal after an incident](#)
- [Foundation for environmental protection - Hazardous waste](#)

Strategic actions

Fire and rescue services should:

- Consider participating in joint training and exercises at sites with existing arrangements for the disposal of polluting materials

Tactical actions

Incident commanders should:

- Determine the most appropriate method to dispose of polluting materials
- Contact the relevant sewerage undertaker if use of the foul sewerage system is the preferred disposal option for polluting materials
- Control the flow of polluting materials to avoid them entering the water environment or

causing the foul sewer to overflow

- Obtain agreement from the relevant environmental agency before any release of polluting materials takes place
- Refer to Site-Specific Risk Information (SSRI) or on-site emergency boxes for arrangements for the disposal of polluting materials
- Attempt to identify the responsible party for the disposal of polluting materials and arrange for them to be contacted
- Be prepared to provide the responsible person about the disposal of polluting materials and cost recovery, if the environmental agency is not present



Control measure - Decontamination: Polluting materials

Control measure knowledge

Carrying out decontamination at the incident site should reduce the risk of spreading the polluting materials to other locations.

For low level contamination, equipment can be flushed with mains water if appropriate. The resultant run-off water should be discharged to a foul sewer, if this action is approved by the sewerage undertaker.

For high level contamination, the resultant run-off water should be contained and removed by a registered waste carrier. Alternatively, it can be discharged into a foul sewer, if this action is approved by the sewerage undertaker and the environmental agency.

Drinking water supplies need to be protected from the run-off produced by the decontamination process. This should be considered when setting up decontamination areas and if necessary additional environmental protection resources should be requested and used.

If decontamination of people or personal protective equipment (PPE) is carried out in an

emergency, it is unlikely that any offence will be committed under the relevant legislation. However, there is no legal defence if pollution is caused by the decontamination of equipment, appliances, roadways or body bags.

If required, decontamination advice should be requested from:

- Environmental agencies
- Tactical advisers, including:
 - Hazardous materials advisers (HMAs)
 - High volume pump (HVP) tactical advisers
- The sewerage undertaker

Strategic actions

Fire and rescue services should:

- Establish arrangements with environmental agencies and sewerage undertakers for the decontamination of equipment at incidents

Tactical actions

Incident commanders should:

- Consider the level of decontamination involved and develop an appropriate tactical plan to deal with it
- Gain approval from the sewerage undertaker or environmental agency for decontamination activity if required
- Protect drinking water supplies from the run-off produced by the decontamination of polluting materials
- Comply with relevant legislation for the pollution caused by decontamination activity
- Consider requesting advice for decontamination from an appropriate specialist or tactical adviser



Hazard - Polluting materials: Fire-related incidents

Hazard Knowledge

Fires in combustible materials, such as those found in bulk at storage or waste sites, can create large volumes of polluting smoke. Fires can spread, be very deep-seated and burn for a prolonged period. They may also have several seats of fire. For more information refer to [Fires in waste sites – Stacked materials](#).

The direct application of water, with or without firefighting additives, to stacks of burning material is often ineffective and may generate large volumes of contaminated fire water run-off, containing a wide range of pollutants.

Smoke plumes

Smoke plumes may contain pollutants that will be deposited when the plume grounds, which can be carried into the ecosystem by rain. Smoke plumes may affect surrounding buildings and residential areas, including vulnerable populations, for example in hospitals, schools and residential homes.

Although people who may be affected by the smoke plume can take shelter from the smoke plume by staying indoors with doors and windows closed, this may not be sustainable if the fire is protracted.

Fire water run-off

Contaminated fire water run-off is a form of polluting material that should be dealt with by using the control measures for the hazard of [Polluting materials](#). It can affect the environment through:

- Direct run-off into a body of water
- Soaking away into the ground
- Entering drainage systems, which may transport fire water run-off pollutants into:
 - Rivers
 - Lakes
 - Estuaries and the sea
 - Groundwater
 - Sewage treatment works

Introducing a heated liquid into a watercourse is also a form of pollution, as it may cause



deoxygenation or kill aquatic organisms. For more information refer to [Foundation for environmental protection - Surface water, groundwater and foul and surface drainage systems](#).

Firefighting foam and additives

Although firefighting foam is a polluting material, this should not stop fire and rescue services from using it if required. Using foam can have environmental benefits, such as reducing water use and extinguishing a fire more quickly.

Firefighting additives, such as wetting agents, are also polluting, even when used in low concentrations.

When using firefighting foam or wetting agents, appropriate pollution control will be required to limit any environmental impact.

The main environmental effects of firefighting foams are:

- They can lead to deoxygenation of water
- They can be toxic to aquatic life
- They may present risks to drinking water supplies
- Some compounds in them do not break down in the environment and can accumulate in plants and animals

For more information refer to [Foundation for environmental protection - Firefighting foam and additives](#).



Control measure - Control the environmental impacts of fire-related incidents

Control measure knowledge

A joint understanding of risk should be developed with the environmental agency and public health organisation. Joint decisions will need to be made about balancing and controlling potential damage to the environment from fire water run-off, against damage to the environment from an unmanaged smoke plume, or from an uncontrolled fire.

It may be beneficial for statutory resilience forums and fire and rescue services to plan for a response to sites, which if involved in a fire may produce large volumes of smoke and require large volumes of firefighting media.

Multi-agency response to smoke plumes

Fires that produce large smoke plumes will require a multi-agency response, which should follow JESIP principles. This may include the involvement of:

- Fire and rescue services, including:
 - Hazardous materials advisers (HMAs)
 - Waste fire tactical advisers
 - High volume pump tactical advisers
- Environmental agencies
- Public health organisations
- External specialists, such as the National Chemical Emergency Centre (NCEC)
- Local authorities
- Police

The behaviour and travel of smoke plumes should be considered. The Met Office may be able to provide plume modelling, with map projections of smoke and ash behaviour based on weather and environmental conditions.

[FireMet](#) is a Met Office weather system designed to provide fire and rescue services with the latest weather information. This can provide immediate forecast conditions, while they are waiting for the Met Office to provide a more detailed [Chemical Meteorology \(CHEMET\)](#) report. It also provides three hours of hind cast data, as well as three hours of forecast data.

Information and advice should be used to make a joint decision about how to deal with the fire and smoke plume, based on the environmental and public health impacts.

Extinguish the fire

Joint decision-making about extinguishing the fire will be enhanced by the fire and rescue service sharing their tactical plan options for extinguishing methods and media, and the environmental agency providing details of potential environmental damage.

If significant smoke plumes present a risk to the environment, large quantities of water and resources may be required to implement an effective tactical plan. Fire and rescue service high volume pumps (HVPs), fixed installation pumps or pumps supplied by a third party, including those provided by environmental agencies, can be used to provide water for firefighting. Water may be provided by the mains supply or open sources; however, the impacts of usage should be monitored to avoid a loss of water supplies to the area or damage to ecosystems.

When using this type of equipment or when large volumes of water are being pumped, the appropriate environmental agency should be informed.

Removing or separating materials involved in fire

Removing or separating materials from a fire that involves a large amount of combustible material, may be an effective way to protect the environment. Using equipment to break up the fire loading can provide better access to seats of fire, enabling firefighting media to be applied more effectively.

If the fire and rescue service does not have appropriate equipment to do this, specialists or on-site staff may be required to assist with this task. It may be beneficial to identify sites where equipment to remove or separate materials may need to be used, and joint working practices agreed with relevant organisations.

If burning material is removed, it may be possible to:

- Extinguish the fire using:
 - Water jets
 - Bunded pools
 - Tanks of water
- Use a controlled burning strategy
- Bury it, with the approval of the appropriate environmental agency and permission of the land owner

For more information refer to:

- [Fires in waste sites – Use competent people to operate on-site machinery](#)
- [Fires and firefighting – Firebreaks and fuel breaks](#)

Strategic actions

Fire and rescue services should:

- Consider identifying or developing specialist personnel who can be mobilised to or provide advice for fires that produce large smoke plumes
- Establish sources of high volume pumps and how these can be requested for incidents that will require large volumes of firefighting media to extinguish a fire
- Identify sites where combustible materials may need to be extinguished using large volumes of water, and consider establishing joint working practices with relevant organisations
- Identify sites where combustible materials may need to be removed or separated, and

consider establishing joint working practices with relevant organisations

Tactical actions

Incident commanders should:

- Co-ordinate the smoke plume response with other organisations in attendance, applying the JESIP principles
- Consider obtaining forecast and prediction information about the behaviour and travel of smoke plumes
- Request high volume pumps and specialist assistance for their use at a fire where the tactical plan requires large volumes of firefighting media
- Consider the impact on water supplies to the area or damage to ecosystems before deploying high volume pumps
- Notify the local environmental agency if a high volume pump is deployed or if large volumes of water are required
- Consider using appropriate equipment to remove or separate material to create a firebreak, provide better access to seats of fire or more effectively apply firefighting media



Control measure - Recycling or reduction of fire water run-off

Control measure knowledge

Fire water run-off is a form of polluting material and should be dealt with as such. In order to reduce the amount of polluting material being produced, it may be possible to either recycle the water being used to extinguish a fire or reduce the amount of water being used.

Fire water run-off recycling

Pumps can be used to recycle fire water run-off, but it is important that this process does not make the situation worse. Repeated recycling of fire water run-off will increase the concentration of pollution, and the risk of spreading contaminants contained in the recycled water spray.

Controls need to be put in place to ensure that the spray or steam from recycled fire water run-off cannot cause harm to emergency responders attending the incident or the local population, depending on their location and distance from the incident.

Before starting to recycle fire water run-off, the potential impact of the material involved in the fire should be identified and assessed. Recycling fire water run-off from mixed or household waste should be avoided, as it can contain organic material such as nappies and food. For all other recycling sites that contain materials such as wood or plastic, recycling the fire water run-off along with other tactics, including controlled burning, presents a viable option for reducing damage to the environment.

It is likely that there will be debris in the fire water run-off that can block pumps, or the nozzles of branches, being used to recycle the water. Suitable pumps and other equipment, such as smooth bore branches, should be used to avoid blockages.

A strategy for recycling fire water run-off should consider:

- Monitoring the impact of recycling fire water run-off and any identified risks
- The use of dams, pools, containment tanks or lagoons to reduce the possibility of blockages from particles contained in the fire water run-off
- Replacing a proportion of the recycled fire water run-off with fresh water, to reduce the level of pollutants and debris in the water being applied
- The need to decontaminate equipment, including personal protective equipment (PPE)

Disposal of used recycled fire water run-off may present a problem for the fire and rescue service towards the end of an incident. Specialist advice on the initial or continued use of recycled fire water run-off, including it being tested for pollutants, and its disposal may be required from:

- Environmental agency
- Public health organisation
- Tactical advisers:
 - Bulk media
 - Waste fire
 - Hazardous materials
- Sewerage undertakers
- Scientific advisers

For more information refer to [Foundation for environmental protection - Additional pollution control techniques](#).

Reducing the volume of fire water run-off

The impact of fire water run-off on compacted materials and ground conditions should be considered. If appropriate, areas of operation where a reduced use of water strategy can be initiated, without significantly increasing the risk of firespread or compromising safety, should be identified.

The amount of water used, and therefore the amount of fire water run-off, can be reduced by using appropriate techniques and equipment, such as water sprays instead of jets or hand-held jets instead of ground monitors.

Strategic actions

Fire and rescue services should:

- Consider procuring equipment suitable for recycling fire water run-off
- Establish arrangements with specialists for testing pollutants in recycled fire water run-off
- Consider procuring equipment that can be used to apply water at reduced levels of flow

Tactical actions

Incident commanders should:

- Consider recycling fire water run-off, to reduce the volume of water required
- Put controls in place to ensure that the spray or steam from recycled fire water run-off cannot cause harm to emergency responders or the local population
- Identify and assess the potential impact of the material involved in the fire before starting to recycle fire water run-off
- Use suitable pumps and other equipment to avoid blockages when recycling fire water run-



off

- Monitor the impact of recycling fire water run-off and any identified risks
- Consider using appropriate containment equipment to reduce the possibility of blockages from particles contained in the fire water run-off
- Consider replacing a proportion of the recycled fire water run-off with fresh water, to reduce the level of pollutants and debris in the water being applied
- Consider the need to decontaminate equipment, including PPE used for recycling fire water run-off
- Obtain specialist advice on the initial or continued use of recycled fire water run-off, including it being tested for pollutants, and its disposal
- Consider identifying areas of operation where a reduced use of water strategy can be initiated without significantly increasing the risk of fire spread or compromising safety
- Consider using techniques and equipment that will reduce the amount of water used, and therefore the amount of fire water run-off



Control measure - Use, containment and substitution of firefighting foam

Control measure knowledge

Use and containment of firefighting foam

Using firefighting foam may have an environmental benefit, if the fire can be quickly extinguished and fire water run-off reduced. If procuring firefighting foam, the type should be considered and an environmental risk assessment of its use developed. The risk assessment for the foam should be shared with personnel who may need to use it.



Containing firefighting foam run-off is preferable to allowing its uncontrolled discharge to drains. Foam run-off is a form of polluting material that should be dealt with by using the control measures for the hazard of [Polluting materials](#).

Protocols for using firefighting foam should consider how its run-off can be contained and the environmental considerations that should be applied. Firefighting foam run-off should not be allowed to enter an oil separator, as it may flush oil into the site's drainage system.

If firefighting foam is used, relevant organisations should be advised of its use, the location and the quantities involved. It may be beneficial to identify sites where firefighting foam may need to be used, and joint working practices agreed with relevant organisations, such as:

- Responsible person
- Environmental agency
- Nature conservation bodies
- Sewerage undertaker
- Local authority
- Highways agency

The type of firefighting foam used should be appropriate for the task and the minimum quantity used. Using foam is a trigger for notifying environmental agencies about an incident, unless there is a formal working agreement about threshold quantities for notifying the local agency. This includes the use of compressed air foam systems (CAFS), which will usually need less concentrate and water to produce adequate foam for firefighting. The reduced levels of concentrate and run-off produced should be easier to contain, and have less of an impact if it enters a body of water.

If firefighting foam may need to be used near or in sensitive sites, such as sites of special scientific interest (SSSI) or water sources, risk assessments should include considerations about its potential impacts and extra care taken.

Substitution of firefighting foam

If using firefighting foam could present a significant risk to the environment, substitution using alternative approaches should be considered, such as:

- Using alternative types of foam
- Using a different extinguishing media
- Using high-pressure water fogging systems
- Adopting a controlled burning strategy



Strategic actions

Fire and rescue services should:

- If procuring foam concentrate, assess the environmental risks of its use and ensure personnel who may use it are aware of the risk assessment
- Implement protocols for extinguishing fires using firefighting foam
- Identify sites where firefighting foam may need to be used and establish joint working practices with relevant organisations
- Ensure the potential impacts of using firefighting foam are included in risk assessments for sensitive sites

Tactical actions

Incident commanders should:

- Apply the protocols for using firefighting foam and consider substitutions for its use if required
- Ensure firefighting foam run-off is not allowed to enter oil separators
- Inform relevant organisations about the use of firefighting foam, the location and the quantities involved



Control measure - Controlled burning: Environmental considerations

Control measure knowledge

If controlled burning is being used as part of the tactical plan for a fire-related incident, the short-term and long-term environmental impacts on air, land and water quality should be considered. Some environmental impacts may not be immediately evident and may take years to recover from. For more information refer to [Foundation for environmental protection - Controlled burn](#).

To minimise the environmental damage, it may be possible to restrict controlled burning to some stages of the fire. For more information refer to [Foundation for environmental protection - Sites and locations where a controlled burn may be employed](#).

It may be inappropriate for controlled burning to be carried out near to sensitive sites, due to the potential environmental impacts, including:

- Ecological or heritage assets
- Water supplies, such as reservoirs or water treatment plants
- Buildings containing vulnerable populations, such as hospitals, schools or residential homes

Site visits may identify situations and locations where a controlled burn:

- Is the preferred tactical option
- Should not be employed

Due to the potential environmental impact, the decision to adopt a controlled burning strategy should be made following consultation with relevant organisations, including:

- Environmental agencies
- Nature conservation bodies
- Public health organisations
- Local authority
- Water suppliers
- Sewerage undertakers

If public health could be affected by air pollution, it may be necessary to inform the public by using the media or other methods. They may need to be evacuated or take shelter from the environmental impacts of controlled burning.

Monitoring of the environmental impacts, especially to air quality and water supplies, may need to be put in place. Monitoring may need to extend to the post-incident phase and may involve the use of an air quality cell, hazardous materials advisers (HMAs) or other specialists.

Strategic actions

Fire and rescue services should:

- Use site visits to identify situations and locations either where a controlled burn is the preferred tactical option or should not be employed
- Establish arrangements for relevant organisations to be informed about the need for controlled burning at a fire-related incident
- Establish arrangements for the public to be informed and advised about controlled burning at a fire-related incident
- Establish arrangements with appropriate specialists for monitoring the environmental impacts of controlled burning

Tactical actions

Incident commanders should:

- Consider the short-term and long-term environmental impacts of carrying out controlled burning
- Consider restricting controlled burning to some stages of the fire, to minimise the environmental damage
- Consider avoiding the use of controlled burning near to sensitive locations
- Ensure the decision to carry out controlled burning is made following consultation with relevant organisations
- Arrange for the public to be informed about controlled burning if required
- Arrange for the public to be evacuated or advised to shelter from the environmental impacts of controlled burning if required

- Consider putting monitoring of environmental impacts in place during and after controlled burning



Control measure - Air quality cell function

Control measure knowledge

If major air pollution occurs at an incident, the environmental agencies and public health organisations will set up an air quality cell. This will include other organisations, including the [Met Office](#), [Solutions from HSE](#), the [Airborne hazards emergency response \(AHER\) service](#) in Scotland and local authorities.

A joint understanding of risk and shared situational awareness should be developed by the members of the air quality cell. The fire and rescue service should provide the air quality cell with updates on the development of the incident and the operational response, to inform the monitoring and review of the potential impact on public health. This should also be used when carrying out operational risk assessments and developing tactical plans.

The air quality cell will co-ordinate air monitoring and provide air quality information. Public health organisations use this information to provide health advice to emergency responders and the public. For more information refer to [Foundation for environmental protection - Air quality risk assessment](#).

Strategic actions

Fire and rescue services should:

- Ensure relevant personnel understand how to obtain and apply the information provided by the air quality cell

Tactical actions

Incident commanders should:

- Consider requesting that an air quality cell is set up



- Develop a joint understanding of risk and shared situational awareness with the air quality cell
- Use air quality cell information to inform operational risk assessments and tactical plans
- Monitor and review the potential impact of the incident and operational response on public health with the air quality cell



Hazard - Physical damage to the environment

Hazard Knowledge

Physical damage to the environment may affect ecological and heritage assets; this includes a broad range of buildings, structures and natural sites. Sensitive sites may struggle to recover, and their ecosystems can suffer long-term or permanent damage. Further information about heritage assets can be found at websites such as:

- [Historic England](#)
- [Historic Environment Scotland](#)
- [Historic Wales](#)
- [Historic buildings and monuments \(Northern Ireland\)](#)
- [UNESCO World Heritage](#)

Important ecological and heritage assets may have designations such as:

- [Sites of Special Scientific Interest \(SSSI\)](#)
- [Areas of Special Scientific Interest \(ASSI\) \(Northern Ireland\)](#)
- [Special Areas of Conservation \(SAC\)](#)
- [Special Protection Areas \(SPA\)](#)
- [Scheduled Ancient Monuments \(as defined in the Ancient Monuments and Archaeological Areas Act\)](#)
- [Areas of Outstanding Natural Beauty \(England, Wales, Northern Ireland\)](#)
- [National Scenic Areas \(Scotland\)](#)
- [Ramsar sites](#)

Sites will have a range of risks across geographical areas. Some may be assessed to be safe for the deployment and movement of fire and rescue service resources, while others will be more

susceptible to physical environmental damage. These sites can be affected by:

- Direct impacts, for example the movement and deployment of fire and rescue service resources, including vehicles, equipment and personnel
- Indirect impacts, for example by the release of polluting materials



Control measure - Minimise physical damage to the environment

Control measure knowledge

If possible, ecological and heritage assets should not be disturbed by fire and rescue service operations. The potential negative impact on ecological and heritage assets should be taken into account when developing a tactical plan, with any physical damage minimised.

Defined paths and tracks

Nature conservation sites often have defined paths and tracks, usually located away from protected areas that are most susceptible to physical environmental damage. If present, these defined paths and tracks should be used, once it has been established that they are suitable for fire and rescue service use, including access for vehicles.

To protect areas that are susceptible to physical environmental damage, personnel and other emergency responders should be advised about which routes, paths and tracks should be used.

Control point sites

Sites used as rendezvous points (RVPs), forward command points (FCPs), equipment storage areas or tool dumps should be located away from areas susceptible to physical environmental damage.

Fire and rescue service activity

It may be appropriate to establish exclusion zones to protect ecological and heritage assets from fire and rescue service activity.

Consideration should be given to the containment or redirection of polluting materials, including fire water run-off, that could damage sensitive sites.

Liaison with relevant parties

Pre-planning has a significant role in enabling the effective protection of ecological and heritage assets during an incident. If this is carried out with the relevant land owners, land managers or nature conservation bodies, it should help to identify any potential hazards to ecological and heritage assets. Multi-agency groups can help fire and rescue services to determine the most effective strategies and tactics to minimise the environmental impact of incidents on ecological and heritage assets.

Operational risk plans

Knowledge and identification of the most sensitive sites is an important factor in reducing physical environmental damage to those areas.

Each site will have its own environmental damage risks, which can be captured in individual operational risk plans. Where appropriate these plans should include:

- Environmentally safe areas for deployments and movements of fire and rescue service resources
- Identification of areas that are susceptible to physical environmental damage

However, a set of generic action plans will also help to identify common environmental protection activity to be taken in the early stages of an incident. For more information refer to [Foundation for environmental protection - Pollution intervention planning](#).

Strategic actions

Fire and rescue services should:

- Ensure that the location of defined paths and tracks are included in operational risk plans or maps
- Consider pre-planning with relevant land owners, land managers or nature conservation bodies for the protection of ecological and heritage assets
- Consider developing operational risk plans for sensitive sites

Tactical actions

Incident commanders should:

- Consider using the least damaging routes to incidents and where suitable, use defined paths and tracks
- Ensure personnel and other emergency responders are advised about which routes, paths and tracks should be used to protect areas susceptible to physical environmental damage
- Locate control points away from areas that are susceptible to physical environmental damage
- Consider establishing exclusion zones to protect ecological and heritage assets from fire and rescue service activity
- Contain or redirect polluting materials, including fire water run-off, that could damage sensitive sites
- Seek advice from relevant parties to determine the most effective strategies and tactics to minimise the environmental impact of incidents on ecological and heritage assets
- Refer to an individual operational risk plan or generic action plan if available, when attending incidents involving ecological and heritage assets



Hazard - Biosecurity

Hazard Knowledge

Non-native species and exotic animal disease outbreaks can have serious environmental, ecological and economic impacts. Exotic animal disease will usually require specific control measures depending on the nature of the pathway.

The [Department for Environment, Food & Rural Affairs](#) (Defra) publishes guidance on [Environmental management](#). The Scottish Environment Protection Agency (SEPA) publishes guidance on [Biodiversity](#). The Northern Ireland Department of Agriculture, Environment and Rural Affairs (DAERA) publishes guidance on [Biodiversity](#). During emergencies, government scientific and technical decisions are supported by the [Scientific Advisory Group for Emergencies](#) (SAGE).



If invasive non-native (alien) species are transferred, they can transform ecosystems and threaten native species by outcompeting them, degrading habitats and spreading disease. This is usually because of a lack of predators of the invasive non-native species and can cause long-lasting environmental harm, such as profuse plant growth affecting oxygen levels in a body of water.

Fire and rescue service activity can present a risk of cross-contamination of diseases or invasive non-native species. Environmental harm can be caused by unintentionally transferring species or transmitting diseases along pathways. Fire and rescue services can affect biosecurity by using water from one open water source and allowing it to run off into another, or by transferring materials on vehicles or equipment, including personal protective equipment (PPE), from one incident site to another.

For more information refer to [Foundation for environmental protection - Biosecurity and non-native species](#).



Control measure - Specialist advice: Biosecurity

Control measure knowledge

National response and guidance to an exotic animal disease outbreak will be led by an appropriate government department, with special procedures adopted during outbreaks. They may issue appropriate guidance to emergency responders with the aim of:

- Eradicating the outbreak
- Protecting the health and safety of the public and those involved in controlling the outbreak
- Minimising the burden on the taxpayer and the economic impact of the outbreak
- Minimising the number of animals that need to be humanely destroyed

The control measures required to minimise the effects of emergency responders on the eradication of the disease will depend on the type of outbreak and how it spreads. National and local contingency arrangements and emergency plans are available for identified risks. Fire and rescue services should consider these risks during development of contingency plans, and develop emergency response plans with emergency planning groups.

Strategic actions

Fire and rescue services should:



- Work with environmental agencies, government departments and emergency planning groups to develop appropriate emergency procedures for use during exotic animal disease outbreaks

Tactical actions

Incident commanders should:

- Follow emergency procedures and any specialist advice provided by appropriate agencies during exotic animal disease outbreaks



Control measure - Clean equipment, vehicles, clothing and personal protective equipment to maintain biosecurity

Control measure knowledge

All equipment, vehicles, clothing and personal protective equipment (PPE) should be thoroughly inspected. Any debris such as mud, plant or animal matter should be removed and left at the site. Attention should be paid to the seams and seals of boots, waders and drysuits. Any pockets of pooled water should be emptied.

Equipment should be hosed down or pressure washed on site. The resulting polluting materials should be contained on site and not be allowed to enter any other watercourse or drainage system.

If facilities are unavailable on-site, any contaminated items should be carefully contained. Once cleaned, equipment may require dipping in disinfectant solution. This may prevent the spread of some diseases but is unlikely to kill invasive non-native species.

The GB non-native species secretariat (NNSS) provides [‘Check Clean Dry’ biosecurity advice](#):

- **Check** your equipment and clothing after leaving the water for mud, aquatic animals or plant material. Remove anything you find and leave it at the site.
- **Clean** everything thoroughly as soon as you can, paying attention to areas that are damp or hard to access. Use hot water if possible.



- **Dry** everything for as long as you can before using elsewhere, as some invasive plants and animals can survive for over two weeks in damp conditions.

Strategic actions

Fire and rescue services should:

- Provide the means for contaminated equipment, vehicles, clothing and PPE to be sufficiently cleaned and dried to maintain biosecurity

Tactical actions

Incident commanders should:

- Check and clean equipment, vehicles, clothing and PPE before leaving the site to maintain biosecurity
- Ensure any contaminated items that cannot be cleaned on-site are carefully contained to maintain biosecurity
- Ensure that after items such as clothing and PPE are cleaned, they are dried for as long as possible before using elsewhere to maintain biosecurity



Hazard - Leaks from high pressure oil pipelines

Hazard Knowledge

A UK-wide network of high pressure oil pipelines transport flammable liquids, including petrol, diesel, aviation fuel and oil. Several liquids may be in a pipeline and pressures can be as high as 85bar. If a leak or breach occurs, a mixture of liquids could be released.

Oil pipelines are typically 100 to 400mm diameter steel pipes, laid in 1.5m deep excavations. Marker posts normally identify the pipeline route. If damaged, up to two million litres of product could be released over a 30-minute period, resulting in a significant environmental emergency. For

more information refer to [Foundation for environmental protection – High-pressure oil pipelines](#).

Pollution from high pressure oil pipelines can occur from:

- Mechanical failure of pipeline machinery
- Accidental pipeline strike
- Illegal activity (pipe tapping)



Control measure - Environmental protection response to leaks from high pressure oil pipelines

Control measure knowledge

The response and tactics used will depend on the type and severity of the oil pipeline leak, its location and resource availability. Any incident is likely to be declared a major incident because of the large quantities of highly flammable product released. Following a risk assessment, the fire and rescue service response may include:

- Blanketing the pollutant with firefighting foam to reduce vapour and ignition risks
- Providing resources to protect:
 - Water supplies
 - Ecological and heritage assets
 - Sewerage systems

The pipeline operator should be contacted immediately as they may be able to isolate the section of the pipeline that has been compromised. For more information refer to [Utilities and fuel – Isolate pipelines](#).

The environmental agency should be notified about the oil pipeline leak so that they can take steps to protect the environment.

Diversion

In some cases, the oil or other pipeline pollutants can be diverted to areas that are considered to be of lower environmental value or having less risk, sometimes referred to as sacrificial areas. For example, it may be appropriate to use low-lying areas, such as roadways.

Emergency plans and diversion strategies, including arrangements for the equipment that would be required, for oil pipeline leaks should be agreed with the agencies involved, which could include:

- Environmental agency
- Highways agency
- Pipeline operator
- Sewerage undertaker
- Nature conservation body
- Public health organisations
- Local authority
- Police
- Landowners
- Marine agency

Strategic actions

Fire and rescue services should:

- Identify if high pressure oil pipelines are located in their area of response
- Consider having multi-agency emergency plans and diversion strategies in place for dealing with oil pipeline leaks

Tactical actions

Incident commanders should:

- Inform or request the attendance of relevant agencies for responding to an oil pipeline leak
- Notify the environmental agency about the oil pipeline leak so that they can take steps to protect the environment
- Follow the established diversion strategy or identify a suitable location that can be used for the diversion of oil from a compromised pipeline