**Fire prevention and mitigation plans**

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You must follow this guidance if you:

* are applying for an environmental permit to store combustible waste
* have a permit with a condition requiring you to have a fire prevention and mitigation plan

The guidance describes the fire prevention standards you must follow when writing a site-specific plan.

You must be able to implement your plan at any time.

You must ensure that all fire prevention and mitigation measures you take are the same as, or superior to, these standards. You must also make sure they comply with regulatory requirements.

You should also follow appropriate sector specific guidance such as [**Waste Industry Safety and Health Forum (WISH) – Waste 28 Reducing fire risk at waste management sites**](https://www.wishforum.org.uk/wish-guidance/).

If you follow other mitigation measures, you should include detailed assessments to satisfy us that:

* the likelihood of fire
* the impact from emissions during or after a fire on the local community, critical infrastructure and the environment
* the resources required by the NRW and other emergency responders during an incident

the post incident clean-up and remediation costs

**1. Who this guidance is for**

This guidance applies to all operators that store any combustible waste including, but not limited to:

* paper or cardboard
* plastics
* municipal waste
* rubber - natural or synthetic, including whole tyres, baled tyres, tyre shred, crumb and fibre
* wood and wood composites including planks, boards, pallets, crates, sawdust, shavings and chips
* waste fuels – including residual combustible waste, Refuse Derived Fuels (RDF) and Solid Recovered Fuel (SRF)
* scrap metals including end-of-life vehicles (ELVs)
* batteries within ELVs
* lithium-ion batteries
* fragmentiser waste - from processing end-of-life vehicles (ELVs), plastics and metal wastes from materials recovery facilities
* all waste electrical and electronic equipment (WEEE) - including fridges, computers and televisions containing combustible materials such as plastic
* rags and textiles
* compost and plant material
* biomass facilities
* Persistent Organic Pollutants (POPs) waste

It applies to operators from these sectors:

* non-hazardous waste
* waste metals (ELV sites and scrap metal)
* WEEE

This guidance can apply to operators in the following sectors, but you may not have to include all your activities in any plan:

* bio-waste treatment (open windrow, in-vessel composting and dry anaerobic digestion)
* agriculture (intensive farming only)
* incineration
* combustion
* paper and pulp
* cement lime and minerals

If you are in one of these sectors, contact us for more information -

**2. Who this guidance does not apply to**

This guidance does not apply to landfill sites.

It also does not apply to the storage of coal, materials or wastes that are:

* flammable (flashpoint of 60oC or lower)
* combustible liquids or gases
* hazardous (excluding any hazardous waste listed above)
* dangerous substances stored under the COMAH (Control of Major Accident Hazards) Regulations

Gas cylinders, aerosols and combustible liquids are not covered by this guidance. You should still consider them in your plan because of the potential they have to cause or increase the impact of fire on a site. Find out more in [**guidance for the storage and treatment of aerosol canisters and similar packaged wastes on GOV.UK**](https://www.gov.uk/government/publications/sector-guidance-note-s506-recovery-and-disposal-of-hazardous-and-non-hazardous-waste)

For advice about other materials and activities contact the [**Health and Safety Executive (HSE)**](https://www.hse.gov.uk/), your local Fire and Rescue Service or us.

**3. When to send us your plan**

If you want to operate under a standard rules permit you do not need to submit a plan with your application. However, you must have one in place that fully complies with the guidance before you start operating and be able to demonstrate this to us. By signing the declaration in your application you are agreeing to this. If you do not have a plan in place, we may consider taking enforcement action.

**New bespoke permits**

If you are applying for a bespoke permit and you want to accept, store and/or treat any of the materials this guidance applies to, you must submit a plan with your application.

**Bespoke permit variations**

You will need to submit a plan for the whole site if you want to:

* apply to accept a new combustible material
* include a new activity
* increase the amount of combustible materials stored at any one time
* or if your proposed changes increase the risk of fire

If your application is to increase annual throughput without increasing the amount of materials stored at any one time you will not be required to submit a plan. You will need to provide written confirmation that:

* the increase is to annual throughput only
* storage of combustible materials covered or referenced in the guidance will not increase from current levels
* The methods used to manage current storage levels (at any one-time limits) meet the standards set out in the guidance

We will not be able to duly make your application without this written confirmation.

**4. Producing your plan**

Consider all sections of this guidance as you write your plan. Your application may be refused or delayed if it does not meet the required standards.

Your plan must be a separate document within your accident management plan. It must form part of your written management system.

All staff and contractors working on site must be aware of and understand the content of your plan. They must know how to prevent a fire occurring and what to do if one breaks out. You must ensure that you have regular exercises to test how well your plan works.

Make your plan available electronically and in hard copy. Employees must be able to access it at any time. Both NRW and the Fire and Rescue Service must be able to access it during an emergency.

Many sites place a copy of their plan in an 'emergency services box'. This could be located at the site entrance.

**5. What to include**

Your plan must include information about your activities, site plans and maps and contacts for sensitive receptors nearby.

**Activities at your site**

Your plan must describe:

* the amount and type of waste you'll receive daily and how you manage it
* the total amount of waste and the types and forms (for example unprocessed, shredded, chipped, fines or baled) that you store on site at any one time
* how you will store the waste
* the maximum time you will store each type of waste for and how you will manage it
* where you will store each type of waste
* the maximum size of any waste stack, including the length, width and depth
* the minimum separation/fire break distance required between all waste/baled waste stacks, and between buildings and waste/baled waste stacks.
* the fire prevention techniques you will use, including how you'll manage hotspots (signs of potential self-combustion), monitoring, reporting, recording and actions
* the steps and procedures people must follow if a fire occurs on your site
* techniques you'll use to minimise the risk of fire spreading within the site or from the site
* how you will provide safe access to the site for Fire and Rescue Services and other emergency responders
* all combustion products and emissions (to air, land and water) from the fire and the emergency response. Include the impact on the community, critical infrastructure and the environment, and how they will be minimised

**Site plans and maps**

Your plan must include a site plan(s) drawn to scale large enough to show:

* layout of buildings (including access points, fire exits & location of utilities)
* locations of isolation points for utilities
* areas where hazardous materials are stored or processed (location of gas cylinders, chemicals, stacks of combustible materials, oil and fuel tanks)
* locations where each waste type will be stored and treated
* all separation distances
* any fire walls
* location of any POPs waste
* main access routes for fire service vehicles – access requirements and the weight of vehicle may need to be confirmed with your local Fire and Rescue Service as various types of vehicles are in use
* any alternative access points around the site perimeter to assist fire fighting
* location of hydrants and water supplies
* drainage systems, foul and surface water drains, and their direction of flow and outfall points
* direction of runoff from site surfaces
* the location of drain covers and any pollution control features such as drain closure valves and firewater containment systems
* any watercourse, borehole or well located within or near the site
* areas of permeable or impermeable ground
* areas of natural and unmade ground
* any groundwater vulnerability zones
* the location of plant, protective clothing and pollution control equipment and materials
* location of “off- site” emergency information pack with site plan
* location of quarantine area
* assembly point for staff and visitors to site
* compass rose showing north and the prevailing wind direction
* location of sensitive receptors within 1km of your site:
	+ human receptors include hospitals, nursing homes, schools, residential areas, places of work, transport networks
	+ environmental receptors include source protection zones, surface waters, potable abstractions, groundwater, fisheries and protected sites including Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs), and Ramsar sites

You must know how to contact these sensitive receptors, and what action to take in the event of a fire.

**6. Manage common causes of fires**

We describe some common causes of fire and the measures you can take to reduce the risk at your site. Depending on the activities you carry out there may be other risks you need to include in your plan, and some may not apply. It is your responsibility to identify all possible risks and demonstrate how you will mitigate them.

**Arson or vandalism**

You need to have adequate security measures in place, such as security fencing, intruder alarms and CCTV. Also consider arrangements for outside of working hours.

**Visitors and contractors**

Ensure all visitors follow the correct safety and fire prevention procedures. Use signs to reinforce fire prevention messages around the site.

**Ignition sources**

Keep naked flames, space heaters, furnaces, incinerators and other sources of ignition at least six metres away from combustible and flammable waste.

**Self-combustion**

This can be due, for example, to chemical oxidation in stored waste material.

What measures will you put in place to monitor and control this issue and help prevent the risk of fire.

More information about self-combustion can be found later in the guidance.

**Hot weather**

During prolonged periods of hot dry weather, you must take steps to minimise external heating of waste stacks.

**Plant or equipment failure**

Ensure that you:

* have a maintenance and inspection programme for static and mobile plant and equipment
* fit vehicles with fire extinguishers, dust filters, spark arrestors and, where practicable, fit all bucket loaders with rubber strips to prevent sparks when the bucket comes into contact with hard-standing
* keep mobile plant that is not being used away from combustible waste

**Discarded smoking materials**

Apply a no smoking policy or have designated smoking areas a safe distance from combustible wastes to prevent accidental ignition.

**Hot works, for example welding or cutting**

Ensure all staff and contractors follow safe working practices, such as a permit to work system, when carrying out hot works. A fire watch for a suitable period should be implemented once hot works have stopped and in particular at the end of a working day. Your insurer may have specific requirements for a fire watch.

**Industrial heaters**

Have written procedures that set out the use and regular maintenance of industrial heaters.

**Plant and hot exhausts**

You must carry out a fire watch or visual check at regular intervals during the working day and at the end of the day. This will help you detect signs of a fire caused by dust settling on hot exhausts and engine parts.

Set out in your plan how regular these intervals are, your methods for recording the inspection, any actions you will take and your concerns. As part of your end of day procedures you must make sure separation distances are observed between plant and material when the site is not staffed.

**Damaged or exposed electrical cables**

Electrics on site should be fully certified by a qualified electrician. Include regular maintenance in your management system.

**Reactions between wastes**

Ensure that you have written procedures within your management system for waste acceptance checks. This is to prevent reactions between incompatible or unstable wastes, including lithium batteries. You must always have a quarantine area available.

**Batteries**

As part of your waste reception procedures, ensure that every effort is made to remove any form of battery unit before it is processed. Fires within waste processing systems can be caused by batteries entering processing machinery.

**Lithium Ion batteries**

Store Lithium and Li-ion batteries away from buildings and other combustible materials. You must store them in a suitable, robust, waterproof container filled with sand or similar inert material. Rogue lithium batteries should not be allowed to accumulate and should be removed from site for appropriate disposal or recycling as soon as practical. Keep any damaged batteries separate.

**Batteries in end-of-life vehicles (ELVs)**

Batteries left connected in un-depolluted vehicles can short circuit and cause fires. You must disconnect or remove batteries from un-depolluted vehicles as soon as possible after you receive them.

You must store Lithium and Li-ion batteries from electric vehicles separately from other batteries. You must store them in a way that prevents them from coming into contact with any liquids or being damaged. If any damaged electric vehicles are accepted to site, store them away from all other flammable materials. ELV sites which accept electric vehicles must explain in their plan how they will identify and manage the risk from these batteries.

**Hot loads deposited at the site**

Use a suitable quarantine area to keep hot loads away from other waste.

**Build-up of loose combustible waste, dust and fluff**

Your plan must state how regularly you will inspect and clean the site to prevent the build-up of loose combustible waste, dust and fluff within buildings and around the site.

**Tramp metal**

Tramp metal, rogue or stray metallic scrap that is found within the waste stream, can find its way into moving machinery and causes localised ‘hot spots’. This can include metallic particles or objects such as nuts, bolts, screws or finer materials such as metallic dust or fillings. Prevent this by pre-sorting and/or extraction by a magnet or eddy current separator, especially when ignitable or explosive materials are present.

**Cylinders stored at the site**

Store cylinders correctly at all times. Identify storage locations on your site plan.

**Leaks and spillages of oils and fuels**

You need to prevent fuels and combustible liquids from leaking or trailing around the site from your own vehicles and ELVs before or after the de-pollution process.

You must ensure that any materials used to absorb combustible liquids are correctly disposed of to reduce the risk of a potential fire situation.

**7. Managing waste**

You must show a clear method to record and manage the storage of all waste on site. You must have robust waste acceptance procedures to prevent receipt of unauthorised waste, or waste that your site does not have the capacity to treat or store.

You should make alternative waste management options available in case your site reaches its safe storage capacity. This should be incorporated as a limit within your site management system.

**Storage times**

These maximum time limits must be used to inform your stock management and rotation process.

* Non-shredded or wastes whose particle size has not been reduced - 6 month storage time
* Baled and compacted wastes - 6 month storage time
* Shredded and similarly treated wastes (that is wastes whose particle size has been reduced) - 3 month storage time
* Combustible fines or dusts and very small particle size wastes - 1 month storage time

These storage times may be too long for some wastes. Carefully consider the self-combustion risk of your waste types.

If you are storing any materials at risk of self-combustion for longer than 3 months you must show what additional measures you will take, including monitoring, to reduce this risk. You must include this information and your monitoring methodology in your plan.

Materials that are at risk of self-combustion if stored for more than 3 months are:

* green material, compost, wood and wood products
* paper and paper products
* general/mixed waste including residual waste and refuse derived fuel (RDF)
* whole tyres
* smaller size or graded materials either stored or mixed
* material that has not had potential hazards removed before stockpiling, for example exposed rust (which can generate heat)
* treated materials which are not cold before storage (treatment processes can generate heat)

Some of the storage periods within your plan may have to be reduced where there is another requirement to ensure compliance with your permit. This could be because of an odour management plan or pest control measures. You must ensure that you comply with any permit conditions that will restrict your maximum storage time.

**Self-combustion**

Many materials can self-combust under certain conditions. The risk generally increases where materials are stored for prolonged periods and the particle size is small.

To help prevent self-combustion taking place, consider adopting the following fire prevention principles:

* reduce risk factors (this includes exposed metal content, proportion of 'fines', mixing of materials and heat generated during treatment)
* minimise stack sizes - smaller stacks with appropriate separation are safer than one larger one
* define the maximum storage time of all materials on site and show how this will be monitored and controlled
* demonstrate good stock rotation for all stored materials and show how this is monitored and implemented daily
* store material in its largest form prior to processing, for instance, do not undertake preparatory treatments such as size reduction of green waste until you intend to carry out the treatment process
* ensure any treated materials have cooled before storage
* monitor and control sub-surface temperature and moisture content with a suitable thermal device (thermal probe/thermal camera) and ensure it is capable of reaching all parts of a stack
* if storing materials in plastic wrapping you must demonstrate a sampling and testing protocol to ensure a representative number of bales (minimum 10%) are assessed during monitoring
* routinely turn stacks
* detect and control hotspots within stacks - steam is a good indicator of self-heating
* minimise external heating during hot weather by shading from direct sunlight

**Stack size and separation distances**

You must include your proposed stack sizes and separation distances in your plan.

Stack length will be a variable based on the separation distance which is achievable at any specific site, so allow flexibility to account for site dimensions and layout.

Separation distance will depend on stack length, or at their ends the width. The longer the stack the greater the separation distance required. When considering separation distances based on thermal heat transfer a burn-face could be on the long-side (length of a stack) or the short-side (width of a stack), or length and width could be equal. Both will need to be taken into account.

​You must adopt the following principles:

* Maximum stack height of 4 metres (or maximum of four bales high whichever is lower) based on practical fire-fighting and stability considerations. The height of a stack should be taken as the longest measurement between the base of the stack and the top. If the ground is uneven this may not be the highest point
* Maximum stack width of 20 metres (provided appropriate access for plant/machinery is available from both sides – if not maximum of 10 metres) based on practical firefighting considerations
* Manage all stacks of materials that can self-combust and demonstrate suitable additional precautions if they are stored for more than 3 months
* Have availability to adequate water supplies or alternative firefighting methods at all times to fight a fire
* A clear area must be established around the perimeter of the site. This can vary depending on the layout of your site and permitted stack sizes in accordance with the separation distances
* Enable easy access for emergency vehicles around the whole site

Information about stack sizes and separation distances for the type of waste you are storing is in [**WISH guidance Waste 28 - reducing fire risk at waste management sites**](https://www.wishforum.org.uk/wish-guidance/).

If your waste stacks are significantly lower than 4 metres you could employ a competent fire engineer to calculate bespoke separation distances for your site. However, small differences in stack height are unlikely to have a significant effect, and you would need to be confident that your stacks are consistently lower.

Stack widths of more than 10 metres (with access from one side) start to degrade the effectiveness of standard fire hoses in applying water to the 'seat' of a fire. It will result in ‘spraying' water in the air and hoping it falls on the right spot.

**Check separation distances**

You can quickly check stack separation distances if you know:

1. waste type - general wastes, plastic or rubber
2. your stacking method, for example loose stacks, bales, proximity to buildings
3. your stack length

[**Check stack separation distances**](https://www.smartsurvey.co.uk/s/calculate_waste_stack_separation/) **(will link to a separate page once published)**

 **Layout of waste stacks**

Plan your storage layout based on potential stack sizes and appropriate separation distances as well as your storage methods and types.

Consider:

* The location of potential ignition sources on your site
* The location(s) of occupied buildings and high-asset value equipment and plant
* Escape and evacuation routes around your site and within buildings must not be compromised by stack layout
* The location of flammable and/or hazardous substances kept on site, such as gas cylinder cages, diesel tanks, quarantine areas which may contain non-conforming wastes etc.
* The locations of on or off-site fire hydrants, other water supplies and fire-fighting equipment – you must not block access to these with your stack layout
* Proximity and location of any infrastructure which may be affected by a fire, such as overhead power lines, major roads and rail lines
* Proximity and location of any off-site, third-party buildings which may be affected by a fire
* Permitted amounts of wastes, and types of waste, allowed on site
* The location of a ‘quarantine’ area, as appropriate to site specifics
* Operational practicalities such as movements of vehicles & designated routes
* Stock rotation requirements, seasonality of supply/off-take
* You should also consider the prevailing wind, where fire water will flow and the firefighting strategy that will be used

**Monitoring and turning stacks**

* Monitor stacks to ensure that temperature increases and changes in moisture content are minimised. The equipment you use to detect temperature and moisture content should be capable of operating at any depth throughout the stack. If you are proposing to have a stack 4m deep, your thermal monitoring equipment should be capable of operating through the depth of the proposed stack.
* You should explain what indicators you will use in relation to temperature and moisture content and the escalation of actions in relation to these indicators.
* The turning of waste stacks, if required following monitoring will ensure that the material remains cold, and any localised warming is dissipated quickly. Your staff must be trained to detect and manage hotspots.
* When turning stacks you should have fire-fighting equipment, such as hoses, at the scene so that you can deal with a fire more quickly if one occurs (hand-held extinguishers are unlikely to be sufficient).

This section does not apply to compost windrows during the composting process.

**Seasonality and stack management**

You should demonstrate that your waste stack management is viable and that you are able to prove:

* the suitability of materials
* the resilience of the supply chain
* end user outlets Including contingencies if your usual outlets are not available. This should include possibly suspending inputs.

You should provide a technical assessment that shows you have confidence that your proposal will be viable in foreseeable market conditions.

If the materials on your site are subject to seasonal variation in demand and/or supply you should demonstrate how you intend to manage these variations. You should be able to demonstrate how you will follow the principle of “first in, first out” so that wastes are stored for no longer than the limits in the storage times section.

All these issues, and the contingencies you employ to manage them, should be in your management system and implemented before operations commence on site.

**Baled waste storage**

If you are storing baled waste, your plan must show how you are reducing the risk of a fire occurring within the bales. We recommend your plan shows:

* what sampling and testing protocol you will use to make sure you assess a representative number of bales (minimum 10%) during monitoring
* that you get representative temperature readings from the centre of the bales; and from bales within the centre of each stack
* that you turn the bales to make sure the waste stays cold

If baled waste seems likely to exceed the storage time limits, you should consider breaking the bales and re-baling them to reduce fire risk. If you intend to do this, you must include this information in your FPMP.

Take care when breaking bales or turning loose waste. Doing so may itself cause a fire. Self-heating may be occurring within a stack, but because of the lack of oxygen a fire has not occurred yet. By opening the bale or turning the stack you may introduce sufficient oxygen to the waste to result in a fire.

When breaking bales and turning stacks you should have fire-fighting equipment, such as hoses, at the scene so that you can deal with a fire more quickly if one occurs (hand-held extinguishers are unlikely to be sufficient).

Bales that are stacked more than four high pose a serious risk of collapse as the stack will become unstable. This could result in the stack collapsing on a person in both a non-fire and fire situation. Stack collapse during a fire poses the risk of increased fire spread as well as the unnecessary risk posed to fire fighters and their ability to fight a fire.

Baled wastes when stored may pose a specific fire risk issue associated with the configuration of storage. Bales of waste are typically stacked directly on top of each other. This can result in continuous vertical air gaps between bales – in effect creating ‘chimneys’ between individual ‘towers’ of bales. If a fire occurs, these chimneys can result in energetic airflows between bales and promote a more rapid and energetic burn. Interlacing bales can help to break-up these chimneys – arranging bales in the same way as bricks in a wall rather than directly on top of each other. You should consider this for baled plastics/rubber where burn temperatures are higher, as interlacing bales may reduce burn temperature and how energetically a fire may burn.

The above assumes that your bales are ‘square’, as is typical for bales of paper, plastics and so on. There are other types of baler, such as those used to bale and wrap RDF and similar waste derived fuels. Bales produced by such equipment may be cylindrical rather than square. Cylindrical bales are stacked interlaced for stability reasons, and so any chimney effect may already be mitigated.

**Enclosing stacks using bays and fire walls**

You can reduce the need for separation distances if you use bays or fire walls between waste storage stacks.

 Bays and fire walls must be of sufficient height, thickness and construction that offer a fire resistance period of at least 120 minutes to allow waste to be isolated to stop fire spreading and minimise radiant heat.

Check the product specification of bays and fire walls to ensure standards of fire resistance are met. The installation method must be in line with the manufacturer's requirements.

You should be able to demonstrate:

* full and frequent stock rotation and how this will be monitored and recorded
* protection from wind
* how you intend to check temperature and moisture content of all the material within the bay so that the entire volume of the stack receives representative checks
* the construction of the walls in terms of how they offer a thermal barrier and enable cooling
* how stock capacity will be managed and controlled (using first in first out concept)
* how you will ensure segregation of materials
* prevention of brands or lighted material moving outside the bay walls
* prevention of bridging across or around walls
* how a ‘freeboard’ space of 1m at the top and sides of the walls will be physically retained at all times in accordance with the latest available guidance
* the frequency and method of turning stacks
* how the quarantine area will be used and how materials will be moved during an incident

**Waste stored within a building**

If you are storing waste within a building, you should adopt the following general principles for fire prevention and the mitigation of fires:

* Ensure waste stack sizes and separation distances are appropriate to the risk.
* The separation distances tool can be used as a starting point but is not absolute guidance for internal storage.
* Consider the use of fire walls/bunkers.
* Consider separation between internally stored wastes and building walls, plant and other equipment within buildings. In general, fires in internally stored wastes are far more likely to spread to buildings and plant than for externally stored wastes. Your insurer is likely to place more emphasis on internal storage than external storage fire management. Seek advice from your insurer to ensure that you have met any requirements for fire detection and fire suppression.
* If you are storing wastes internally in large quantities, such as in warehousing, then you must seek competent advice on the precautions to be taken. These will depend on the type of building used, the types of waste being stored and what fire precautions are already in place. This is a specialised area and the general standards applied to the warehousing of goods may not be appropriate to the internal storage of wastes.
* If the building is heated, and/or you have heated floors consider the potential for self-heating of the waste and how to mitigate the risk.
* You must ensure that all escape routes, fire exits, alarm call points and fire extinguishers are kept clear and free from waste at all times.
* Ensure electrical equipment and heaters are kept free from waste, including dust and packaging materials.
* Waste storage areas should be fire compartmented away from office areas.
* Waste storage areas should have some means of clearing smoke from the building, such as openable skylights or roller shutter doors, to aid fire-fighting.

**Waste stored in containers**

If you store waste in containers such as shipping containers or skips, each one must be accessible so any fire inside it can be extinguished. Shipping containers should not be stacked and must be secured with a lock outside of operational hours.

If you have a fire, you should be able to move containers as soon as possible in a safe manner to prevent the fire spreading. You should set out in your plan the procedures you will put in place to allow this to happen.

Smaller containers such as IBCs should be stored using the separation distances and stack sizes set out in this guidance.

**Storage of whole end-of-life vehicles (ELVs)**

You must set out how you will store ELVs.

Each vehicle should be accessible from at least one side. This will allow a fire to be fought and unburnt vehicles to be accessed and moved to prevent the fire spreading.

These rules will limit any row to a depth of 2 vehicles.

Where you store vehicles one on top of another, or on racking, you should limit this to 3 vehicles high so the stack can remain stable during a fire.

**Cylinders in end-of-life-vehicles (ELVs)**

As part of your depollution process, you must ensure that any LPG tanks within vehicles have been safely removed.

Find out about [**removal of LPG tanks on GOV.UK**](https://www.gov.uk/government/publications/removal-of-lpg-tanks-guidance).

Go to [**guidance for waste sites on end-of-life vehicles**](https://www.gov.uk/guidance/end-of-life-vehicles-elvs-guidance-for-waste-sites).

Go to technical advice to authorised treatment facilities on [**depolluting end-of-life vehicles**](https://www.gov.uk/government/publications/depolluting-end-of-life-vehicles-guidance-for-treatment-facilities).

**Compost production**

For composting activities, the maximum stack sizes do not apply when the waste is actively managed and monitored during the composting process. Waste stored before and after active composting must follow the maximum pile sizes.

**8. Fire detection**

You should ensure that you have adequate procedures in place to detect a fire in its early stages, at any time of the day or night so you can reduce its impact. You should seek competent advice on the potential installation of a fire detection system.

Your detection system should be proportionate to the nature and scale of waste management activities you carry out and the associated risks.

Appropriate automated systems may include:

* smoke and heat detectors including temperature probes
* CCTV visual flame detection systems
* spark, infrared and ultraviolet detection

The design, installation and maintenance must be covered by an appropriate UKAS-accredited third-party certification scheme.

Many insurers have specific requirements for fire alarm, detection and suppression/extinguishing systems. If you fail to meet these specifications and requirements your insurance may be invalidated.

Talk to your insurer to agree a way forward and establish approvals for any installations.​

**9. Fire suppression**

If you store waste in a building, you should seek competent advice on the potential installation of a fire suppression system. This system should be proportionate to the nature and scale of waste management activities you carry out and the associated risks. Consider the different activities that are carried out within the building and whether different systems may be appropriate in different areas or near certain equipment like conveyor belts or shredders.

Materials must be kept a minimum of 3m below the level of the spray or sprinklers.

When deciding what type of system to install you need to consider that:

* the Fire and Rescue Service may not be able to enter the building during a fire
* a suppression system may not extinguish a fire, although it may prevent a fire spreading and then allow the fire to be fought effectively by the Fire and Rescue Service
* the water supply to a fire system must be reliable and adequate at all times

Appropriate fire suppression systems may include:

* sprinklers
* manual open deluge system
* deluge/water spray systems
* mobile foam trolley
* water monitors/cannons/curtains

You should ensure that the design, installation and maintenance of all your automated suppression equipment is covered by an appropriate UKAS-accredited third-party certification scheme

Many insurers have specific requirements for fire alarm, detection and suppression/extinguishing systems. If you fail to meet these specifications and requirements your insurance may be invalidated.

Planning and building regulations may also apply depending on the size of your building.

**10. Firefighting strategy**

It is important that you design your site layout to allow for active firefighting. Active firefighting means always having the resources available on site to fight a fire. This will help allow a fire to be extinguished within the shortest time possible.

Active firefighting does not mean that you or your staff have to fight the fire. No one should put themselves at risk by trying to fight a fire.

The resources needed include:

* any heavy mobile plant you have available that can be used to move waste around the site, for example loaders, excavators, material handlers. Plant must be suitable for the task by having completely enclosed cabs and fire and heat protected hydraulic systems.
* the use of portable water carriers/bowsers which can prove to be an essential mechanism to help extinguish fire affected waste
* adequately trained staff available
* available water supply
* finances available for additional resources if required

A variety of firefighting techniques can be used together or separately to extinguish a fire. These include:

* applying water to cool unburned material and other hazards
* separating unburned material from the fire using appropriate heavy plant
* separating burning material from the fire to quench it with hoses or in pools or tanks of water

Firefighting techniques may also include suffocating the fire using soil, sand, crushed brick and/or gravel or allowing a controlled burn. You can only do this if you have permission from us to do so, and you remove and dispose of contaminated material as soon as it is safe to do so.

All these techniques may be used by staff on site if they are suitably trained and are supervised at all times by the Fire and Rescue Service. However, protecting the health and safety of people on site must be your priority.

To decide which of these options, or combinations of options, is appropriate you should consider the:

* scale and nature of the environmental hazards and activities that take place on site
* risks posed to people, the environment and property
* type of materials you store on site, the form you store them in and the length of time needed to extinguish a fire involving them
* availability of firewater containment facilities
* local topography, weather conditions and fire scenarios that could reasonably be expected on site

**Action to take if a fire occurs**

Include action to take if a fire occurs such as:

* reducing the amount of firewater run-off generated - use sprays and fogs rather than jets
* recycling firewater if it is not hazardous and it is possible to re-use
* applying water to cool unburned material and other hazards, taking care to prevent this water causing or adding to water pollution and/or increasing air pollution
* separating unburned material from the fire using suitable heavy plant
* separating burning material from the fire to quench it with hoses or in pools or tanks of water (this will reduce the amount of firewater produced)
* using soil, sand, crushed brick and/or gravel (if smoke is threatening local communities) to help suppress the fire, although you can only do this when:
	+ groundwater vulnerability is low
	+ agreed as a part of a firefighting strategy by the Fire and Rescue Service and supported by NRW
	+ contaminated material is removed and legally disposed of as soon as it is safe to do so

**11. Water supplies**

You must have sufficient water supplies available to your site for firefighting to take place and to manage a worst-case scenario incident, for example your largest stack is on fire.

Depending on your site this could be water in storage tanks or lagoons on site, or access to hydrants or mains water supply.

On larger sites, and especially on sites where reprocessing or power generation takes place, you should consider providing a private fire hydrant system with the necessary supply of water.

A 300m3 stack of combustible material will normally require an average water supply of at least 2,000 litres a minute for a minimum of 3 hours. To calculate the minimum amount of water required, use the size of your largest stack in metres cubed multiplied by 1,200 litres an hour. You must show your calculation for the water supply required and confirm the source of water in your plan.

Alternative water supplies such as an on-site lagoon can be considered to supplement tanked or mains supplies. These alternative supplies need to be capable of being accessed promptly. Speak to the Fire and Rescue Service about whether any additional equipment would be required and how long it might take to deploy prior to any permit applications being made. Use of nearby rivers would be subject to agreement between us and the Fire and Rescue Service.

Alternative water supplies also need to be reliable. Consider whether they can be used all year round. Relying on a lagoon which is only half full or empty for part of the year may result in water shortage issues. In some rare cases wells can be used, but their capacity and recharge characteristics must be adequate.

You may be able to reduce water volumes needed if you have a system that lets the Fire and Rescue Service re-circulate the water they are using (fire water). You may need to filter this water and the Fire and Rescue Service will also need suitable adapters to connect to your system. Depending on the types(s) of waste that you store, it may not always be appropriate or safe to re-circulate the water.

**Hydrants**

The water supply to hydrants can vary due to the time of day and other demands on them. Hydrants also vary in size and the amount of water they can provide. You must confirm that any hydrant is accessible and suitable for use in an emergency Provide written confirmation that this has been checked with your local Fire and Rescue Service before applying for your permit.

Fire hydrants should:

* conform to British Standard 750 or equivalent
* be within 100m of the site access

On larger sites, and especially on sites where reprocessing or power generation takes place, you should consider providing a private fire hydrant system with the necessary supply of water. Private hydrants must be regularly serviced and maintained.

**Water tanks**

Consider the capacity of tank your site can accommodate before installing.

Tanks must always be accessible and have sufficient water in them.  You must ensure you have the right connection to work with Fire and Rescue Service equipment. Staff should be trained on how to access a tank in an emergency. Tanks must be maintained and serviced according to a maintenance plan.

You must have procedures in place to ensure that the water is safe to use by the Fire and Rescue Service and does not become stagnant and potentially contaminated.

British Standards BS 336:2010 Specification for fire hose couplings and ancillary equipment and BS 8580: 2019  for Legionella Risk Assessments apply for the use of storage tanks and you must demonstrate that you can meet them.

**Wetting agent or foam**

If you would like the Fire and Rescue Service to use a water additive for fire-fighting, you must speak to your local service about its suitability first and provide a record of that discussion. It is not appropriate for use on all waste types. You will still be expected to have an adequate supply of water on site to be able to mix the additive according to the manufacturer’s specification. Include details on how you will store and use the additive in your plan.

**12. Managing fire water run-off**

You must be able to contain the run-off from fire water to prevent pollution of the environment. You must be able to implement proposed measures within a realistic timescale without hindering the efforts of the Fire and Rescue Service.

The containment facilities and pollution equipment you need will depend on the:

* size of your site
* amount of waste you store
* firefighting strategy

The [**CIRIA document Containment systems for the prevention of pollution (C736)**](https://www.ciria.org/ItemDetail?iProductCode=C736F&Category=FREEPUBS) may help you to identify what facilities and equipment you may need for your site.

You must take all reasonably practicable steps to minimise pollution from fire water including preventing fire water entering:

* surface waters, for example rivers, streams, estuaries, lakes, canals or coastal waters
* into the ground

If you do not manage this issue, you may be committing an offence and we may take enforcement action.

Secondary and tertiary containment facilities for fire water run-off include:

* impermeable bunds
* storage lagoons and associated equipment
* shut-off valves
* isolation tanks
* modified areas of your site such as a car park
* pollution control equipment such as fire water booms and drain mats to block drains or divert fire water

You may also be able to divert fire water to your local sewers. You will need agreement in principle from the sewerage company before including this measure in your plan. You will need to provide evidence of approval in your plan.

Your environmental permit may let you store combustible wastes on hard standing rather than an impermeable surface with sealed drainage. If so, in accordance with Horizontal guidance H1: Risk assessment you must assess the potential effect of fire water on:

* the local groundwater and surface water bodies
* any well, spring or borehole within 50 metres used for the supply of water for human consumption, including private water supplies

**13. Quarantine area**

You must set out how you will use your quarantine area in the event of a fire. You must have the ability to be able to move waste to it as soon as possible. A quarantine area can be used as a designated area to place fire affected waste to ensure that it is fully extinguished. Alternatively, unburnt wastes can be moved into the quarantine area for isolation and to help prevent it catching fire. The Fire and Rescue Service will ultimately decide the best use of this area during an incident and the quarantine area should be able to meet both requirements.

You must set out in your plan the location of the quarantine area and the volume of waste that it can hold. The quarantine area should be within the permitted boundary area of the site and during an incident should be large enough to both:

* hold at least 50% of the volume of the largest stack
* have a separation distance of at least 6 metres around the quarantined waste (this can be decreased if concrete bunkers/walls will be used)

For operational reasons you may want to keep the location of the quarantine area flexible. If so, you should identify on your site plan all the areas you could use.

You should always keep at least one designated quarantine area clear – unless it is being used in the event of a fire.

If you use your quarantine area to store material temporarily (for example, non-permitted wastes), you should make sure you can remove those wastes as soon as is practicable. In the event of a fire, you must remove those wastes immediately. Your plan should include details of the procedure you will use to do this.

**14. During an incident**

If there is an incident on site, the responsible person or a member of staff must be able to attend to assist the Fire and Rescue Service.

Your plan must have contingency measures in place for dealing with issues during and after a fire. For example:

* diverting incoming wastes to alternative sites during a fire
* having a plan for how you will notify those who may be affected by a fire, such as nearby residents and businesses
* contractors that might be used to assist with additional plant for firefighting techniques, removal of waste material, containment and removal of excess water run-off
* Any plant or machinery to be used during an incident must be fit for purpose and driven by a suitably qualified person

**15. After an incident**

You must set out:

* how you will clear and decontaminate the site
* the steps you must take before the site can become operational again

Consider any potential long-term implications of an incident and the effect it might have if you wish to surrender your permit in the future. You may need to submit a [site condition report](https://naturalresources.wales/permits-and-permissions/environmental-permits/horizontal-guidance/?lang=en) to demonstrate how the site has been returned to a satisfactory state.

**16. Reviewing and monitoring your plan**

It is essential that your plan is kept up to date to ensure that you maintain compliance. It should be treated as a live working document and be reviewed regularly to reflect any changes to your business.

You should ensure that you have regular exercises to test how well your plan works and make sure that staff understand their responsibilities and what actions need to be carried out.

You must review your plan if you:

* experience a fire incident - following any fire, it is essential that your plan (and overall fire management measures) is reviewed and improved as required to address any issues or concerns
* accept additional combustible waste streams on site
* accept an increase in waste volumes
* develop site infrastructure, for example new buildings
* install new equipment or plant, for example a baler, loading shovel, sort-line or trommel

Areas that could need updating include:

* staff training
* site monitoring

**Staff training**

* New starters induction training
* At regular intervals - refresher courses, toolbox talks, on-site exercises and drills
* Ensure training need is monitored and training records kept

Ensure your plan is available and that all staff know where it is kept. Staff must receive training to enable them to competently carry out the procedures and measures contained within your plan.

**Site monitoring**

* As part of your site operations, carry out site inspections before, during and after shifts to ensure:
	+ No identifiable ignition sources
	+ All equipment is operating/turned off correctly
* Ensure waste stacks and separation distances are in accordance with your plan
* Monitor, control and record temperature of waste stacks
* Monitor and record residence times of wastes on site
* Ensure plant and equipment are adequately serviced and maintained by qualified personnel. Make sure daily, weekly and monthly checks are undertaken and records kept
* Ensure periodic testing of fire prevention and mitigation equipment is carried out

**17. If your waste material contains Persistent Organic Pollutants**

Persistent Organic Pollutants (POPs) can have significant effects on human health and the environment. They are subject to the POPs regulations 2019 which specify the appropriate treatment for their recovery and disposal. You should segregate POPs waste from other waste and store it separately.

You are responsible under your [**duty of care**](https://www.gov.uk/government/publications/waste-duty-of-care-code-of-practice) to know if your waste material contains POPs.

If there is a fire, you must tell the Fire and Rescue Service that there is POPs waste on site. Any residue from a fire involving POPs waste may contain POPs and so will need to be segregated and treated following the regulations. This could include firefighting water.