



**Writing Waste Wood
Fire Prevention Plans
(FPPs)**

woodrecyclers.org



The Voice of the Waste Wood Industry

Contents Page

Introduction	P2
Seasonality and Alternative Measures	P4
Section 1 - Your Site	P8
Section 2 - Preventing Fires	P10
Section 3 - Reducing the Impact of a Fire	P14
Section 4 - Glossary of Terms	P20

Introduction

To operate a waste wood recycling operation, you will need an environmental permit, which includes a requirement for a Fire Prevention Plan (FPP). This is a guide to producing an FPP for the Waste Wood Sector, which will meet the objectives of the Environment Agency Fire Prevention Plan Guidance Version 3 (hereafter referred to as the Guidance). You can do this by using the measures set out in the Guidance or where you do not propose to include all or some of the measures in the Guidance in your FPP by proposing 'alternative measures'. Please remember that all FPPs are site specific as no two sites are exactly the same.

The measures set out in the Guidance are interdependent, changes to one measure are likely to have an impact on one or more of the other measures. If you propose alternative measures you must consider this interdependency and ensure that the objectives of FPP Version 3 guidance are met in relation to your application site. The objectives of the Guidance are: minimising the likelihood of a fire happening; aiming for a fire to be extinguished within 4 hours; and minimising the spread of fire within the site and to neighbouring sites.

This waste wood guide looks at how you can evaluate your site-specific risk to help you develop suitable measures for fire prevention and detection and accommodate your operational requirements, including storage time and pile size.

It has been produced in consultation with the Environment Agency (EA), the National Fire Chief's Council (NFCC) and the Waste Industry Safety and Health (WISH) Forum and, when used in conjunction with their associated guidance, will help you to reduce the risk and impact of fire on your site.

This template has 3 sections:

1. Your site
2. Preventing fires
3. Reducing the impact of fires

Each section is explained with points which need to be considered and addressed. The list is not exhaustive, and you may need to consider other issues which may be relevant to your individual operations or site.

In addition to the information below, you must demonstrate that your FPP is easily accessible and understood by staff and contractors working on site. Your FPP should be a live document, which you regularly review and update, with approval from the relevant regulator for substantial changes. It should be a single, standalone document which can be accessed quickly when needed to ensure all information is readily available on request. In addition, regular training and exercises with staff on site to test the workability of the plan should be in place.

Note: You must ensure that you address all sections of the FPP guidance in your plan. If a particular section does not apply to your site or activity, then you must explain why this is not applicable in the details of your plan. For example, if the question asks, 'do you have appropriate suppression systems in your building?', and you do not have a storage building on site, do not simply put not applicable, state that you have no storage buildings on site. If your FPP has incomplete information, then this may result in delays in processing your application. It is also advisable to follow the layout of the FPP guidance. If the information is not clearly presented it can again result in delays.



Seasonality and Alternative Measures

Seasonality of Supply and Demand

The UK waste wood market experiences perverse seasonality in respect of supply and demand. That is, availability of raw waste wood is at its peak in the summer when demand is at its lowest and the reverse in the winter.

Your FPP should be designed to account for any envisaged seasonal fluctuations and must include contingencies to show how you will adequately manage such scenarios and detail what alternative measures will be in place to meet the 3 objectives.

It may be useful to provide a visual overview of your seasonal fluctuations. See example below:

Example of Seasonal Offtake Profile													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
TONNES INTAKE RAW MATERIAL													
Supplier A	200	200	250	300	400	400	500	600	600	500	400	200	
Supplier B	1000	1000	1250	1500	2000	2000	2500	3000	3000	2500	2000	1000	
Supplier C	500	500	625	750	1000	1000	1250	1500	1500	1250	1000	500	
Supplier D	500	500	625	750	1000	1000	1250	1500	1500	1250	1000	500	
Supplier E	500	500	625	750	1000	1000	1250	1500	1500	1250	1000	500	
Total raw material in	2700	2700	3375	4050	5400	5400	6750	8100	8100	6750	5400	2700	61425
OFFTAKE FINISHED													
Customer A	2000	2000	2000	2000	2000	2000	2000	0	2000	2000	2000	1500	
Customer B	1000	1000	1000	1000	1000	1000	0	1000	1000	750	1000	1000	
Customer C	2500	2500	2500	2500	2500	0	2500	2500	3000	1875	4000	4000	
Total finished product out	5500	5500	5500	5500	5500	3000	4500	3500	6000	4625	7000	6500	62625
OPEN STOCK	1000	7200	4400	2275	825	725	3125	5275	9975	12075	14200	12600	
CLOSING STOCK	7200	4400	2275	825	725	3125	5375	9975	12075	14200	12600	8800	
	Brought forward												

Alternative Measures

If an applicant wants to rely on alternative measures to meet the objectives of the FPP guidance, for example departing from the pile sizes set out in the guidance, the measures proposed, and their effectiveness need to be justified and evidenced.

Where an applicant proposes to change one of the measures set out in the Guidance, the applicant will also need to explain how this might impact on other measures and whether that impact means that other measures also need to be adjusted in order to meet the objectives.

For example, an applicant might wish to store waste in piles that exceed the height of 4m set out in the Guidance and may be able to demonstrate that the first objective of the guidance (minimising the likelihood of a fire occurring) can be met by temperature monitoring and management of the pile .

In order to be able to demonstrate that the second objective (aim for a fire to be extinguished in 4 hours) and third (prevent the fire spreading) can be met, an applicant may, as an example, have to adjust the location and size of quarantine area , separation distances the methods of active fire fighting and the equipment available to tackle any fire or to intervene when the critical ignition temperature is reached.

For some years, the industry has used a grading system – A to D – to indicate the source of waste wood and its appropriate use. See below:

Grades of Waste Wood

GRADE	Typical Markets	Typical Sources of raw material for recycling	Typical Materials	Typical non-wood content prior to processing	Notes
GRADE A: Clean untreated	A feedstock for the manufacture of professional and consumer products such as animal bedding, equine and landscaping surfacing. May also be used as a fuel in domestic and non-IED Chapter IV biomass installations and for the manufacture of pellets and briquettes.	Distribution, Retailing, Packaging and Secondary manufacture, e.g. joinery and pallet reclamation.	Solid softwood and hardwood. Packaging waste, scrap pallets, packing cases and cable drums. Process off-cuts from the manufacture of untreated products.	Nails and metal fixings. Minor amounts of paint and surface coatings.	Is a waste for the requirements of Waste Management Regulations. Does not require an IED Chapter IV installation and should not contain any treated or low-grade material.
GRADE B: Industrial waste wood	A feedstock for industrial wood processing operations such as the manufacture of panel board products.	As Grade A, plus construction and demolition operations, skip operators, transfer stations.	May contain up to 60% Grade A material as above plus building and demolition materials and domestic furniture made from solid wood.	Nails and metal fixings. Some paints, plastics, glass, grit, coatings, binders and glues. Limits on treated or coated materials as defined by end users and IED.	The Grade A content is not only costly and difficult to separate, it is essential to maintain the quality of feedstock for chipboard manufacture and PRN revenues. Some feedstock specifications contain a 5% to 10% limit on former panel products such as chipboard, MDF and plywood. Should not contain lower grade material. Is a waste for the requirements of Waste Management Regulations. Will require an IED Chapter IV compliant installation for biomass.
GRADE C: Municipal waste wood	For use in the IED Chapter IV biomass installations and for panel board in controlled volumes.	All above plus municipal collections, transfer stations and HWRCs.	All of the above plus fencing products, flat pack furniture made from board products and DIY materials.	Nails and metal fixings. Paints, coatings and glues, paper, plastics and rubber, glass, grit. Coated and treated timber (non CCA or creosote).	Mainly suitable for IED Chapter IV compliant biomass installations, but also suitable for panel board manufacture with correct processing and blending. Is a waste for Waste Management Regulations.
GRADE D: Hazardous waste wood	Requires disposal at facilities licensed to accept hazardous waste.	All of the above plus Agricultural fencing, trackwork and transmission pole contractors.	Agricultural fencing, transmission poles, railway sleepers, cooling towers.	Copper chrome arsenic (CCA) preservation treatments and creosote.	Is a waste for Waste Management Regulations. Requires disposal in a process regulated to take hazardous waste.

Source: The Wood Recyclers' Association

This grading system is currently being reviewed and the WRA intend to produce new guidance on classification of waste wood during 2019, which will provide further clarity on sources of clean, untreated, treated, non-hazardous and treated, hazardous waste wood.

In addition, when waste wood is stored in different fraction sizes then the likelihood of self-heating and ignition will vary. See the table below in relation to the behavioural characteristics of different fraction sizes.

Behavioural Characteristics of Different Fraction Sizes of Waste Wood

Product	Common Sizing (At least 80% of material to be:)	Common Origin	Fire Risk				Type of Fire	Water Absorption
			Arson	Mass self-heating	Localised ignition, e.g. batteries and oily rags			
 Un-Processed	Greater than 300mm	Raw waste wood as received prior to any mechanical recycling activity	HIGH	LOW	HIGH	FLAMING IGNITION	LOW	
 Pre-Crush	100mm - 300mm	Generated from the first pass of raw material through the likes of a slow speed shredder						
 Chip	10 - 100mm	The common finished product size produced from un-processed or pre-crushed material. Likely this material has been through at least 1 chipping and subsequent screening process						
 Fines	Less than 10mm	Generally a process residue from the production of chip	LOW	HIGH	LOW	SMOULDERING COMBUSTION	HIGH	



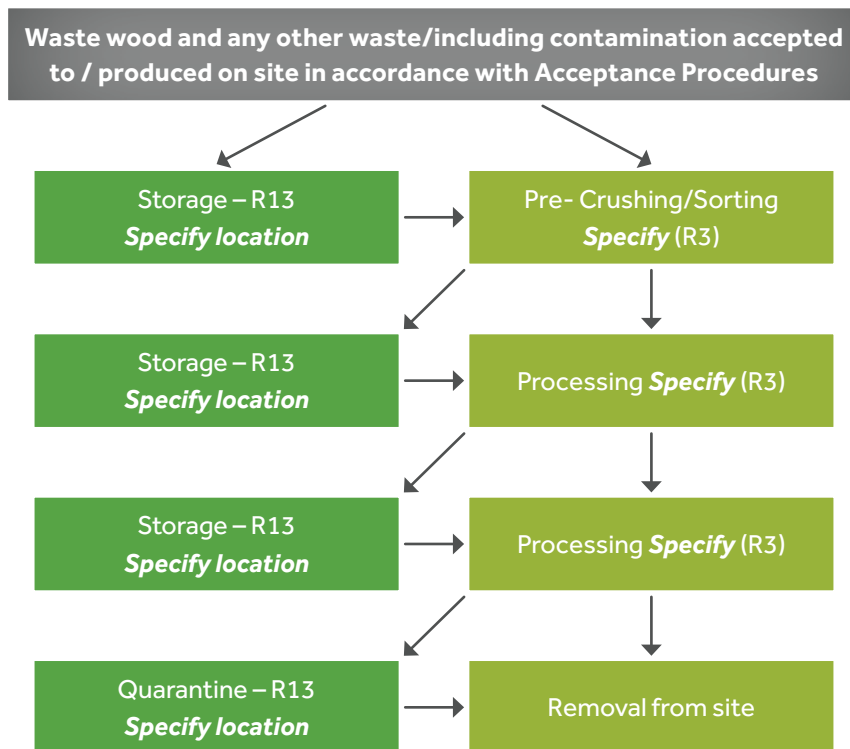
Section 1 - Your Site

This section details:

- **Your Activities**
- **Your Infrastructure**
- **Your Layout**
- **Your Local Community**

Your site	Name, address and OS grid reference
Activities	<p>You must explain what activities you undertake on your site, covering your waste wood operations and any other site activities which could pose a fire risk. For example, you need to explain whether you just store wood and bulk up to move on or whether you are involved in waste wood processing. It would be good practice to include a flow diagram of your on-site activities. <i>(see example below - You would need to fill in the details as relevant to your particular operation and you could do it for the whole site or per particular waste stream. Be specific about your waste acceptance procedures).</i></p> <p>You must include details of what grades of wood you take in and what fraction sizes you store it in, following the grading system and fraction sizes guidance shown above. Every parcel of waste on site must be identified and specifically referenced whether it's wood or not. If you have an existing environmental permit, give its reference number and maximum storage and throughput limits.</p> <p>Site Operations: R13: Storage of Wastes pending recycling/reclamation R3: Recycling or reclamation of organic wastes which are not used as solvents</p>
Your location plan and sensitive receptors review (see also site plan shown on page 9)	<p>You need to produce a plan(s) showing sensitive receptors within a 1km radius of the site. Sensitive receptors may include:</p> <ul style="list-style-type: none"> • Schools, hospitals, nursing and care homes, residential areas, workplaces • Protected habitats, watercourses, groundwater, boreholes, wells and springs supplying water for human consumption • Roads, railways, bus stations, pylons (on or immediately adjacent to the site only), utilities, airports <p>The plan should have a compass rose showing north and indicating the prevailing wind direction.</p> <p>In the first instance, your local Environment Officer may be able to advise you on how to obtain a plan that can help identify sensitive receptors that may be affected by a fire at your site. However the responsibility to identify all sensitive receptors on your plan remains with you.</p> <p>You may find google maps or interactive maps such as Natural England's "Magic" useful in assisting with identification of sensitive receptors in your area. A review of sensitive receptors identified should be undertaken, assessing the likelihood of them being impacted and taking into account the prevailing wind direction. You should identify any mitigation measures or procedures (e.g. notification) that will be in place during an emergency on site to limit the impact from a fire.</p>

Example flow diagram of on-site activities



Your site	Name, address and OS grid reference
<p>Your site plan (this may be included in the plan above)</p> <p>There may need to be more than one plan to clearly identify all the features</p>	<p>Your fire prevention plan must include a site plan(s) drawn to scale showing:</p> <ul style="list-style-type: none"> • Site boundaries • Layout of buildings • Any areas where hazardous materials are stored on site • Main access routes for fire engines and any alternative access points around the site perimeter to assist fire fighting • Hydrants and water supplies • Areas of natural and unmade ground • The location of fixed plant or where mobile plant is stored when not in use • Drainage runs, pollution control features (such as drain closure valves and fire water containment systems) • Storage areas with pile dimensions and fire walls (where applicable) - include waste stored in a building, bunker, or containers • Quarantine area/s • Fixed Security Measures (boundary fencing, CCTV) • Smoking Areas • Storage of process residues and hazardous materials (gas canisters, fuel) • Electricity/gas supply lines/pipes • Location of mobile plant storage <p>If you have a large site with different activities, then it is advisable to use multiple site plans showing the different areas.</p>

Section 2 - Preventing Fires

This section reviews the risks on your site and what procedures you have in place to minimise them. It needs to review all operations you undertake on site in detail, including when the site is operational and not operational.

Some waste can self-combust under certain conditions. Self-combustion happens when a material which can self-heat generates heat at a faster rate than it can be lost to the environment. The temperature continues to rise in the material speeding up the rate of reaction and releasing even more heat. Eventually the material reaches auto-ignition and the material then self-combusts.

You can prevent self-combustion by carefully managing storage times, pile volumes and height, and the temperature of the waste and by not driving/tracking on material.

Preventing fires	
Pile sizes/fraction sizes/volumes and dimensions	<p>For each different fraction size (unprocessed, pre-crush, chipped and fines), you need to provide details of what and how much waste wood you will be storing over the year.</p> <p>This includes waste once it has been accepted, as well as in storage before and after treatment. Wherever possible you should store waste wood in its largest fraction size.</p> <p>You should include the:</p> <ul style="list-style-type: none">• Total volume of waste stored on site using a seasonal profile (there is an example of this above)• Total volume for each waste type• Total amount for each fraction size – if applicable, you should aim to store wood in the larger fraction sizes. – see guidance above• Volume/size for the piles of waste wood. This should include maximum height, length and width. Current guidance (See section 9.1) states that for all waste piles, the maximum height allowed is 4 metres and the maximum length/width allowed is 20 metres. <p>If you require larger pile sizes, you must demonstrate that you can still meet the three main objectives of FPP guidance by detailing additional fire prevention and detection measures.</p>
Storage management	<p>You must detail how long you are storing the different fractions of waste wood, taking into account that no waste can be stored in excess of 6 months.¹</p> <p>You must use good stock rotation (i.e. you must show how you will follow the 'first in, first out' principle) and show that you have a clear method to record and manage the storage of all waste on site. Please outline your contingency measures should your standard offtake be affected.</p> <p>Waste acceptance procedures should identify any previously stored waste wood and account for any additional resultant fire risk.</p>

¹ In exceptional circumstances and if agreed with the appropriate environmental regulator, you may store waste wood for longer in line with your agreed seasonal profile.

Preventing fires

<p>Monitoring and control of temperature</p>	<p>If you're storing combustible wastes in the maximum pile sizes of 4 metres for longer than 3 months or storing in pile sizes that exceed sizes stated in the FPP Guidance, you must show what additional measures you propose to prevent self-combustion, hotspots or arson and to monitor and manage the temperature of the waste.</p> <p>You should have a clear written procedure for continuous trend analysis of temperature increases, when and how to monitor temperature, what temperature 'trigger' levels you will have which indicate a pile is heating up, what to do if trigger levels are reached e.g. 'hotspot' actions or if other problems are identified. You should include how you ensure staff are trained to detect and manage hotspots and all persons holding responsibilities on site.</p> <p>In the absence of specific evidence, you should assume a trigger temperature of 50°C. In some instances, isothermal calorimetry testing may be appropriate to provide the evidence to support your application. This may provide specific trigger temperatures. You need to ensure that you can monitor all of the pile and not just the surface (e.g. with a probe or other device that can take representative readings from within the pile. Your procedures need to include what to do when the site is not operational/out of hours.</p> <p>Tip - If you have systems that send out automatic messages, give details of what systems you have, frequency including messages/warnings, security staff etc and how it is maintained.</p>
<p>Actions to limit self-heating</p>	<p>You must outline how you'll control heat within piles to prevent self-combustion, e.g. never drive/track on waste wood piles, stock rotation times, store in the correct format, reduce metal content and reduce fines content.</p> <p>You need to consider the design and layout of stockpiles to ensure that heat can dissipate effectively through the pile and that the stacks can be accessed easily. You should include details of magnets and eddy current separators used to remove ferrous and non-ferrous metals.</p> <p>In the event of extreme weather conditions, you should review your FPP procedures.</p>
<p>Hot Spot Management</p>	<p>Following identification of elevated temperatures in a pile of waste wood, you should implement your previously agreed hot spot management procedure, which would start with a risk assessment on whether it needs further monitoring/investigation or active intervention, taking further actions as appropriate, which could include:</p> <ul style="list-style-type: none">• Increase monitoring around affected area• Isolate the affected material• Cool in situ or in the quarantine area if appropriate <p>Discussion with your local FRS would be useful to assist with the production of this risk assessment as they may be able to offer advice on active intervention. The aim of this procedure is to prevent hot spots becoming a full combustion event. You should have well-documented procedures along with staff training, management review and training drills. The chipping process in itself does not tend to heat woodchip, but you need to be aware of fines on machinery moving parts and ensure you have an adequate cleaning programme in place.</p> <p>Tip - If you are experiencing regular hot spots, this is a sign that you should investigate further and increase your fire prevention measures and your pile layout/size may need to change.</p>

Preventing fires	
Arson or vandalism	<p>You must have security measures in place to prevent arson or vandalism at your site, such as security fencing, intruder alarms and CCTV. These must include arrangements for outside of working hours.</p> <p>Further details should be provided where necessary, for example How many CCTV cameras are on site? Where are these located? Are they monitoring areas where waste is stored? How is CCTV monitored? What are the procedures if a security patrol or CCTV finds a problem on site?</p> <p>Don't forget that you need to say that all detection and monitoring equipment is maintained in accordance with the manufacturer's specification and any required certification schemes.</p> <p>Tip - Also detail how often security guards or others walk around the site.</p>
Plant and equipment	<p>You must:</p> <ul style="list-style-type: none"> • Have a maintenance and inspection programme for static and mobile plant and equipment • Fit vehicles with fire extinguishers • Keep mobile plant that is not being used away from combustible waste <p>Your maintenance procedures should include clear actions that you take if a problem is found. Records should be kept of any maintenance and any action taken following a problem (examples should be shown within the FPP).</p> <p>Tip - Make sure you include information about how often you clean, down your equipment. Check your insurance for minimum distance to keep mobile plant away from waste wood storage areas and buildings</p>
Infrastructure, housekeeping and site inspections	<p>You should undertake regular site inspections and maintenance around the site and keep a record of these checks as part of your general housekeeping procedures. For example, measures to prevent build-up of loose combustible waste, dust, fluff and litter around the site or measures to check the integrity of any building, wall or drainage channel.</p> <p>You should detail when and how often you will undertake the checks and what action you will take if problems are found.</p> <p>Tip - Focus on good housekeeping – a clean site is a safe site.</p>
Electrical faults	<p>Electrics on site must be fully certified by a qualified electrician and you must have written procedures in place that set out the regular maintenance.</p> <p>Please note that referring to PAT testing of appliances only is not sufficient.</p> <p>Tip – You must list how often and to what standard the checks are carried out.</p>

Preventing fires

Ignition sources	<p>You need to detail how you will limit ignition sources on your site as per your 'Safe Systems of Work' (also known as individual Health and Safety Plan). This includes:</p> <ul style="list-style-type: none">• Keeping sources of ignition (e.g. naked flames, heaters) at least 6m away from any combustible or flammable waste• Sources, such as heating pipes and industrial heaters should have documented procedures for their safe use• Safe working practices, such as a permit to work system, should be in place for staff and contractors when undertaking hot working, such as welding or cutting. You should carry out a fire watch for a suitable period after hot works have ended.• Smoking should be prohibited or only be undertaken in designated, safe areas. <p>In addition to the above, you should ensure any waste specific ignition sources such as gas canisters or batteries are detailed and mitigation is in place.</p>
Heat and spark prevention	<p>You need to describe and detail all plant and equipment which could cause heat or a spark and set out the actions you will take to prevent it.</p> <p>For example, a fire watch at regular intervals during the working day to detect signs of a fire caused by dust settling on hot exhausts and engine parts. A high-risk time is the hour after plant/machinery has been switched off when dust can settle on hot exhausts etc. A fire watch may simply be carrying out visual checks in line with your 'Safe Systems of Work' (Also known as Individual H&S Plan).</p>
Gas bottles and other flammable items	<p>FPP guidance doesn't apply to non-waste materials such as gas cylinders, aerosols and flammable liquids. However, you must detail where gas bottles and other flammable items are kept, to ensure they are isolated and are stored at least 6 meters away from waste.</p> <p>You should also set out procedures for regular inspections to ensure they remain safe. You must prevent fuels and combustible liquids leaking or trailing from site vehicles.</p> <p>Tip – Add in your leaks and spills procedure.</p>
Smoke/heat/flame detectors	<p>You must have procedures in place to detect a fire in its early stages, so you can reduce its impact. Your detection system should be proportionate to the nature and scale of waste wood activities on site and their associated risks. Please note, this is required whether you operate inside or outside.</p> <p>Appropriate automated systems may include smoke and heat detectors, CCTV visual flame detection systems and spark, infrared and ultraviolet detection.</p> <p>The design, installation and maintenance of automated systems must be covered by an appropriate accredited third-party certification scheme or you must show that the system is working to at least an equivalent standard. FPP guidance states UKAS accreditation, however if operators can demonstrate that equipment is otherwise accredited to the same standards or better, the EA will take this into consideration.</p> <p>However, you should be aware that this only identifies when there is a problem, rather than resolving it. What are your procedures if it is activated? How does it notify you or the emergency services? What are the maintenance procedures to ensure it is fully functional?</p>

Section 3 - Reducing the Impact of a Fire

This section details the additional information that you will need to set out to provide evidence that if a fire were to occur on your site, it can be extinguished in less than 4 hours. In the majority of cases this will be achieved by active fire fighting.

Your justification needs to be given for how waste will be managed on your site to enable this and will depend on the location and scale of the site/operation detailed in Section 1.

Justification should be from an environmental risk perspective rather than a financial point of view.

Reducing the impact of a fire: Management and storage of waste	
Wood Waste acceptance – incoming loads	<p>You must document your waste acceptance procedures for acceptable/non-permitted and contaminated waste wood or hot loads.</p> <p>Your plan should detail how to identify them and subsequent action to be taken. You must have a process in place to quarantine this material and an appropriate quarantine area on site.</p>
Waste acceptance – permitted waste	<p>You must provide details on:</p> <ul style="list-style-type: none"> • How much waste wood you accept daily • Where the waste wood originates from together with relevant waste codes. This should help identify how old the waste wood is, which could increase the risk of self-combustion. • What fraction size is the waste wood in? Has it been pre-treated (e.g. chipped, sorted)?
Waste treatment	<p>You need to explain the treatment processes the waste wood goes through on site. This should include how soon after arrival the waste wood is treated, whether the treatment causes any heat and how this will be managed, including time allocated to allow the waste to cool down before it is stockpiled.</p>
Waste storage – separation distances	<p>You need to detail the separation distances between the waste wood piles/storage areas and how this will be maintained.</p> <p>The distances should be suitable both to prevent the spread of fire between piles and also allow for the safe access of emergency vehicles and plant during an incident and/or to make fire breaks.</p> <p>See section 11.1 of the FPP guidance for guidance on the minimum distances. A minimum of 6m separation must be in place between waste piles and the site perimeter, buildings or other combustible materials, unless you can demonstrate other separation means and measures are proposed.</p> <p>Tip – Check your insurance cover as this may be different.</p>

Reducing the impact of a fire: Management and storage of waste

Fire Walls	<p>Bays or fire walls can be used to reduce the separation distances between piles. To provide the same protection as the minimum separation distance, they need to be properly designed, constructed, maintained and managed.</p> <p>Bays or fire walls must be constructed to appropriate standards so that they:</p> <ul style="list-style-type: none">• Resist fire (both radiative heat and flaming)• Have a fire resistance period of at least 120 minutes to allow waste to be isolated and to enable a 4-hour extinguishing of the fire. You will be required to provide evidence of this. <p>You also need to detail:</p> <ul style="list-style-type: none">• How waste will be rotated within the bays to ensure oldest waste is removed (i.e. first in, first out policy) and details on how this will be recorded• If temperature monitoring is required, how you'll check the temperatures of all the waste within the bay, to ensure you carry out representative checks on the entire volume of the pile• you have taken into account the calculation of flame height and radiation in preventing the spread of fire between piles• you'll prevent brands or lighted material moving outside or over the bay walls and igniting other waste• The specification and construction of the walls, how the joints are sealed and how they will provide an effective thermal barrier• How you will access the bays to allow waste to be moved easily in an emergency and details on quarantine area and process• The freeboard space at the top of the walls and how this will be enough to prevent heat/flames/embers spreading to adjacent bays (this may require flame height and radiation calculations). It is recommended that a 1 metre freeboard is maintained where piles are stored in line with FPP stockpile limits.
Quarantine area	<p>A quarantine area is somewhere you can place burning waste to extinguish it. You can also move unburnt waste into the quarantine area to isolate and prevent it from catching fire. The quarantine area must be within the boundary of the site for which you hold a permit and can be located in more than one area of the site or other permitted sites. You need to provide detail on your quarantine provisions, which should be able to accommodate the material that would be moved in accordance with your FPP. The area(s) should be identified on the site plan. There must be a separation distance of at least 6 metres around the quarantine area(s).</p> <p>For operational reasons, you can keep the location of the quarantine area flexible. If so, you must identify on your site plan all the areas you could potentially use. You must keep at least one specified quarantine area clear at all times – unless it's being used in the event of a fire. Car parks/drive in areas can be used, but there must be a plan in place to remove vehicles or stop traffic in the event of an incident and this must be documented and practised.</p> <p>If you use your quarantine area to store material temporarily (for example, non-permitted waste) you must make sure you remove that waste as soon as is practicable. In the event of a fire, you must remove it immediately. Your fire prevention plan must include details of the procedure you will use to do this. You must set out how you will use your quarantine area in the event of a fire. You must be able to move waste to it as soon as possible. You must consider how you will do this if a fire starts when the site is unattended. Your FPP must include details of how staff on site will be trained to safely move material to the area and the procedure you will use to clear the area if required.</p>

Reducing the impact of a fire: Management and storage of waste

Storage within buildings and suppression systems

If you store waste in a building, you must install 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.

Your system needs to enable a fire to be extinguished within 4 hours. When deciding what type of system to install you need to take into account 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

Appropriate fire suppression systems may include:

- Sprinklers
- Water spray (deluge) systems
- Water curtains
- Fire blankets

In general, the Fire and Rescue Service are unlikely to enter a building unless there is immediate risk to life, due to risk of building collapse and other hazards and complexities of the incident.

Therefore, if you are storing waste wood in a building, you will be required to have some form of appropriate suppression system in place. You should detail the specification of the system and you must demonstrate that it could extinguish a fire within 4 hours. Appropriate systems (e.g. sprinklers, water spray, water curtains, fire blankets) should be proportionate to the nature and scale of waste management activities on site and their associated risks.

For all automated suppression equipment, the design, installation and maintenance must be covered by an appropriate accredited third-party certification scheme and evidence of this needs to be supplied in your FPP.

Tip – Don't forget to say how often your suppression system is maintained.



Reducing the impact of a fire: Management and storage of waste

Active fire fighting

You must detail what you will do in the event of a fire and demonstrate you have designed your site to allow for active firefighting.

These procedures should work towards extinguishing any fire within 4 hours.

It is important to note, active firefighting doesn't mean that you or your staff have to fight the fire. No one should put themselves at risk by trying to fight a fire. Active firefighting means having the resources available at all times to fight a fire and aid the Fire and Rescue Service (FRS). The resources needed include:

- Plant you can use to move waste around the site, for example loaders, excavators, material handlers
- Staff
- Available water supply
- Finances

As a minimum, processing operations should cease and no further waste wood should be accepted for the duration of an incident.

Active firefighting can include (but is not limited to) any of the following, either together or in conjunction:

- The use of water or foam (via hoses or designed suppression system) and how you will use it e.g. by quenching or spraying burning waste wood or cooling unburnt material
- Covering the burning waste wood with soil (or other suitable material) to suffocate a fire and limit oxygen supply. This is an acceptable option as long as the Environment Agency has agreed and you remove contaminated material as soon as possible.
- Breaking apart the burning pile to allow water/foam to penetrate
- Removing un-burnt material close to the fire
- Moving the burnt material to reduce the fuel available and allow material to be quenched (in hoses or in pools or tanks of water)

You need to include details of how (once the fire is extinguished) you will dispose of solid and liquid wastes arising from a fire. You should detail that discussions will be had with any sewage/wastewater treatment sites and/or landfills prior to waste being brought to receiving site to ensure that receiving site can cope with firewater/contaminated soils/waste. It would be sensible to plan this prior to an incident and have arrangements in place for disposal.

All these techniques may be used by staff on site, as long as they're suitably trained and, in some cases, supervised by the FRS. However, protecting the health and safety of people on site should be your first priority.

Reducing the impact of a fire: Management and storage of waste

<p>Water supply</p>	<p>You need to detail what water is available to actively fight a fire and by what means it will be available (e.g. via mains water, tanks, abstracted, hydrant). It is also advisable to check with the local FRS that the fittings on tanks etc. can marry up to the hoses used by the FRS and if you are relying on hydrants, you should have them tested to demonstrate that the flow rate is achievable as this can vary in practice</p> <p>You must have enough water available to manage a worst-case scenario, which is defined as your largest waste wood pile catching fire or be able to demonstrate how you would actively reduce stack size to therefore reduce the quantity of water/foam required.</p> <p>As a benchmark, you'll need a water supply of at least 2,000 litres a minute for a minimum of 3 hours for a 300 cubic metre pile of combustible material. You should use these figures to accurately scale the amount of water needed depending on the pile sizes on site.</p> <p>It is possible to reduce water volumes needed if you have a system that allows re-circulation of the water (fire water). Use of a suitable type of fire-fighting foam can also reduce the volume of water required. However, you may need to filter this water and the FRS will also need to connect to your system. Therefore, you need to provide evidence that it is appropriate and safe to re-circulate the water. Prior discussion with FRS is important here as some FRS will not re-circulate firewater and some will. It may not always be appropriate or safe to re-circulate the water. Sump is generally required on a site to allow FRS to pump runoff from. It also depends on how dirty the firewater is as it may have an adverse effect on FRS pumps and equipment.</p>
<p>Fire water containment</p>	<p>In addition to supply, you need to detail how the volume of water required to extinguish a fire will be contained. Using the figures for water supply above, you need to work out an overall estimate on the likely amount of water to be used in an incident and then show a corresponding level of containment.</p> <p>The containment facilities and pollution equipment you need will depend on the size of your site, amount of waste you store and outlined firefighting strategy. Section 17 of the FPP guidance outlines a number of secondary and tertiary containment facilities. You may be able to divert fire water to your local sewers, but an agreement from the sewerage company needs to be in place and evidenced before including this measure in your fire prevention plan.</p> <p>Any method of reduction of fire fighting water will have a corresponding reduction in used firewater which requires containment.</p>
<p>Contingency for during and after the incident</p>	<p>Your plan must have contingency measures in place for dealing with issues during and after a fire. These include diverting incoming waste wood to alternative sites, timescales and notifying those who may be affected by a fire.</p> <p>You also need to set out how you will clear and decontaminate the site and the required steps before the site can become operational again.</p> <p>Possible points to include are:</p> <ul style="list-style-type: none"> • Where can you divert incoming waste wood to? • What channels will you use to contact neighbouring properties? • Do you have access to the FPP, emergency procedures, contact details and site plans if your site office or whole site is unavailable?



Section 4 - Glossary of Terms

Term	Definition
Alternative Measures	Fire prevention, detection or active fighting measures adopted to enable applicants to deviate from standard FPP Guidance whilst still meeting the 3 objectives of the Guidance.
Arson	Intentionally, deliberately and maliciously setting fire to buildings and/or materials.
Chip	Waste wood that has been processed to a fraction size of between 10-100 mm.
EA FPP Guidance	Guidance produced by the English Regulator, the Environment Agency, for operators that store any amount of combustible waste.
Eddy Current Separator	Equipment which uses a powerful magnetic field to separate non-ferrous metals from waste after all ferrous metals have been removed.
Environmental Permit	Authorisation by a regulator or local authority to carry out activities that may pollute the environment.
Fines	A process residue from producing waste wood chip and generally less than 10mm.
Flaming Ignition	Well ventilated combustion process normally emitting heat, light and smoke.
Fraction Size	Common sizing terminology used to describe waste wood material.
FPP	Fire Prevention Plan.
Grades of Waste Wood	System used to indicate sources of waste wood and its appropriate end use.
Hot Spot	An area within a waste pile normally caused by localised ignition.
Isothermal Calorimetry	A methodology to assess the likelihood of a material to undergo self-heating (Also known as basket testing).
Localised Ignition	A fire caused by something specific, e.g. batteries, oily rag, cigarette.
PAT Testing	Portable Appliance Testing – UK System of safety checking electrical appliances.
Pre-Crush	Waste wood produced after first pass of raw material through a slow speed shredder. Generally, fraction size is between 100 and 300 mm.
Process Residue	Material left once waste has been processed into a useful resource.
Seasonality	The effect of the seasons on supply and demand.
Self-heating	Occurs when an exothermic chemical or biological process within a material increases the temperature of the material without the application of an external heat source.
Smouldering Combustion	Slow, low-temperature, flameless form of combustion.
Unprocessed	Raw waste wood as received prior to any mechanical processing.





The WRA would like to thank all those involved in helping to write this guide, namely: Vicki Hughes from Hadfield Wood Recyclers; Richard Coulson from RWE; Mark Hall from Stobart Energy; Lucy Binnie representing South West Wood Products; and Peter Buckley and Howard Leberman from the Environment Agency.

All imagery featured in this publication courtesy of Hadfield Wood Recyclers, Timberpak and Countrystyle Recycling.