
# Vegetation Fire Risk Management:

## Toolkit for Practitioners and Advisors

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# 1. INTRODUCTION

**PURPOSE AND AUDIENCE**

The purpose of this toolkit is to provide landowners, advisors and those interested in a risk-based approach to reducing the likelihood and severity of vegetation fires in the United Kingdom. It should be read in conjunction with Vegetation Fire Control Measures. This toolkit was designed and consulted upon by a wide range of stakeholders within the South East England Wildfire Group and England and Wales Wildfire Forum.

**LAND MANAGEMENT APPROACH**

A key consideration is the acceptance of a managed, rather than a 'natural' environment that requires regular active management to reduce the wildfire risk. Therefore non/minimum-intervention practices may not be appropriate in areas of fire risk. This toolkit reflects the unique character of each site as well as the landscapes they fit within.

**BACKGROUND**

Vegetation fires are a natural part of the normal climate and of the biosphere. This has been called a 'necessary symbiosis', in which fire and life have benefited from each other's effects. In the past have been caused by volcanoes, lightening and rockslides but now the major cause is man made. Therefore the wildfire risk can not be eliminated but the scope, scale and impact of incidents can be reduced.

**WHAT ARE VEGETATION FIRES?**

Vegetation fires can be wildfire incident or prescribed burning operation that uses vegetation as their fuel. They can occur over a wide range of land uses (forestry, military training areas, areas of conservation, road and rail networks, green infrastructure and agricultural land), habitats (woodland, dwarf scrub heath, grassland etc.) and cover a few square metres or tens to hundreds of hectares.

***Wildfires Incidents***

The majority of vegetation fires are small incidents, many of which go unreported to landowners and/or Fire and Rescue Services. Some of these events have the potential to develop into larger scale wildfire incidents that can consume considerable natural resources as well as social, economic and environmental impacts (as defined in Appendix A). Major incidents occur when a number of factors become aligned. Wildfires are of concern because

they have the potential to be spatially highly dynamic and can occur over large areas. Additionally incidents can be resource intensive and occur over prolonged periods.

***Prescribed Fires***

Prescribed burning (sometimes called controlled fires) is a tool to manage vegetation variety of habitats. However it does have the additional benefit of reducing fuel loading. As with other management practices prescribed burning will only be appropriate on a limited number of sites due to ecological and operational limitations and impacts on surrounding risk factors (detailed in Appendix A).

# 2. APPLICATION TO LAND AND FIRE MANAGEMENT

The approach taken in this guidance can be applied to any land holding to define appropriate strategies and management practices. Below are examples for use in the rural and built environment:

| | |
|---|---|
| Fire and Rescue Service | • Risk Information |
| | • Integrated Risk Management Planning (IRMP) |
| Land Management | • Site Management Planning |
| | • Open Habitats Policy and Environmental Impact Assessments |
| | • Grant funding |
| Local Authority | • Risk mapping for development and civil contingency planning |

**DEFINING THE SCALE AND SCOPE OF THE RISK MANAGEMENT APPROACH**

The majority of our rural and urban areas, at present, are unlikely to be effected by vegetation fires. Therefore a pragmatic approach should be adopted when considering vegetation fire risk management. This can be achieved by breaking up the risk management at appropriate levels.

***Landscape scale level***

Landscape scale is defined as a holistic, multi-functional approach to biodiversity conservation, local economics and social issues, that looks at a wide range of habitats rather than at specific species. Spatially they are usually defined by Landscape Character Assessments to provide a distinct, recognisable and consistent pattern of elements, be it natural (soil, landform) and/or human (for example settlement and development) in the landscape that makes one landscape different from another. At this level the landscape is made up of numerous land ownership and varied mosaics of habitats and species. Not all habitats may be susceptible to wildfires but a rough analysis of fire incidents from FRS's can soon help target areas that should be the focus of risk management.

***Site scale level***

At the site level the landowner and managers consider the vegetation fire impacts on their own site. Careful consideration should be given to adjacent land use and neighbouring sites. The approach outlined in this document can be integrated into existing management planning and therefore build upon existing preparedness and prevention measures.

You may wish to consider using the following tools to help inform your decision making:

- Your own reporting systems and evidence
- FRS's Incident Reporting System (IRS) and Integrated Risk Management Plans (IRMP)
- Local Authorities Community Risk Registers (CRR) and Local Risk Registers (LRR)

# 3. RISK MANAGEMENT

Each site at risk is unique in its species composition, shape, size, topology, accessibility, fuel composition etc. as well as by the events that affect it (e.g. climate, weather, users etc.). This forms a complex matrix that can change in subtle ways without warning. In order to capture some of these issues a risk-based approach is used to help define possible hazards and define their risk.

**RISK ANALYSIS PROCESS**

The guidance in this document uses a six-stage approach to calculate site risk. The flow chart in Appendix B defines the process and the stages are as follows:

**Stage 1**: Priority Setting

**Stage 2:** Habitat and Species at Risk

**Stage 3:** Risk Assessment of Vegetation Fire Hazards

**Stage 4:** Impact of Public Access

**Stage 5:** Site Risk Rating

**Stage 6:** Review setting

The risk management template in Appendix C can be used to formally record and summarise the outcomes of the analysis. This can then be integrated in to the desired application, such as site management planning or Environmental Statements.

**STAGE 1 – PRIORITY SETTING**

When considering vegetation fires in management plans the landowner should consider Fire and Rescue Service priorities during their response to incidents and defined in their order of importance:

- **High Priority: Life** e.g. Public, employees and fire fighters.

- **Middle Priority: Property & Businesses** e.g. Residential dwellings, retail, commercial and industrial as well as timber and food crops, sporting and tourism.

- **Lower Priority: Environment** e.g. Species and habitats (plants and animal life)

Land managers and advisors must ensure these priorities are defined. They are primary focus of decision making where the risk level is greater than low.

**STAGE 2 – HABITATS AND SPECIES AT RISK**

Habitats and species require climatic influences, some not visually noticeable, over days, weeks and months for the right conditions for wildfire to occur. The most important of these subtle phenomena is drought causing long term loss of moisture in vegetation increasing susceptibly to ignition.

The risk to habitats and species considerable variety and complexity so a simple approach has been adopted. Table 1 defines Broad Habitat Classifications (Jackson, 2000) that are at a low to high risk. When defining risk the age of species is an important factor. Table 2 provides a simplified definition of young and mature species at high risk for reference. Both tables are taken from policy guidance (CLG, 2008) on wildfires.

**Table 1 –** Susceptibility of habitats

| Sectors | Risk Rating (Broad Habitat Classification) | |
|---|---|---|
| | High | Low |
| Forestry | Coniferous Woodland | Broadleaves, mixed and yew woodlands<br>Boundary and linear features |
| Heathland and Moorland | Dwarf shrub heath<br>Bracken | Bogs |
| Agricultural | Arable and horticulture | Improved grassland<br>Neutral grassland<br>Calcareous grassland<br>Acid grassland |
| Rural Infrastructure | | Built up areas and gardens<br>Rivers and streams,<br>Standing open water and canals |
| Built Infrastructure | Built up areas and gardens (including roadside and railway side vegetation). | |

**Table 2 –** Susceptible species

| Sectors | Risk species by age groups | |
|---|---|---|
| | Young | Mature |
| Forestry (1) | • Pines (*Pinus species*)<br>• Spruce (*Picea species*)<br>• Firs (*Abies species*)<br>• Eucalyptus (*Eucalyptus*<br>• *Species*) | • Eucalyptus (*Eucalyptus species*) |
| Agricultural | • Arable Crops<br>• Grasses | • Arable Crops (2)<br>• Grasses |
| Heathland and Moorland<br>Green and Built Infrastructure | • Grasses<br>• Dry Heath (*Calluna species*)<br>• Wet Heath (*Erica species*) (3)<br>• Gorse (*Ulex species*) | • Grasses<br>• Dry Heath (*Calluna species*)<br>• Wet Heath (*Erica species*) (3)<br>• Gorse (*Ulex species*) |

Notes:

(1) Young trees are defined as being within 5 to 20 years old

(2) Crops nearing maturity for harvest are at highest risk

(3) Drought and the intensity of fire can limit the resilience of wet heath to combustion.

## STAGE 3 – RISK ASSESSMENT OF HAZARDS

### *Risk Assessment*

Risk assessment of hazards is the careful examination of what could cause harm to life, property and the environment, so that you can weigh up precautions need and prevent harm. The risk assessment process is defined in Section 5.

### *Gauging the depth of risk assessment needed*

The guidance has been design to provide two approaches to risk assessment using the templates in Appendix D:

- **Scoping Wildfire Risk Assessment** – A simple and quick assessment of hazards to define the risk. This approach allows land managers and advisors to scope out issues and gauge if a more detailed assessment is necessary.

- **Full Specific Wildfire Risk Assessment –** A more detailed and comprehensive assessment of hazards build upon the scoped out risks and the supporting hazards checklist in Appendix E. This approach is appropriate for site management plans, Fire and Rescue Service risk planning, Environmental Statements and grant applications.

### *Vegetation fire hazards*

The hazards associated with vegetation fires are divided into two groups;

- Site hazards
- Infrastructure and asset hazards

Site hazards reflect the properties characteristics, its uses and the land management upon and adjacent to it from the wildfire risk. Infrastructure and assets hazards consider man made and natural features and facilities that may be effected by a wildfire.

This may cause an adverse effect on people, businesses and the surrounding environment. Appendix E provides two checklists but it should be noted that they are by no means exhaustive and other site-specific hazards should be considered if appropriate.

***Site Hazard Checklist***

Site risks are generic hazards to be considered when undertaking assessments. The checklist defines hazards under the following list:

- **Site characteristics:** Size of fire possible, adjacent land, topographical and natural protection features, unexploded ordnance, access, fuel loading, previous incidents
- **Climate and weather:** Exposure, drought and heat resilience
- **Management and training:** Wildfire or prescribed fire training, fire contingency and management planning
- **Land management practices:** Effectiveness of management practices, prescribed fire planning, detection and prevention of wildfires.
- **Land management activities:** Safety of machinery used, implementation, use of pyrotechnics and prescribed burning.

***Infrastructure and asset hazard checklist***

Our rural and built environment has upon it infrastructure and/or assets that have important local, regional and national needs. Their disruption, damage or loss can have considerable impact upon our lives. These 'Risk factors' are defined in Appendix A and cover the following:

- **Major infrastructure:** Buildings, transport and wayleaves
- **Environmental assets:** Nature conservation, landscape and heritage designations
- **Social assets:** Recreation and leisure, cultural, heath and aesthetic values
- **Economic assets:** Food, timber, biofuel production, sporting, tourism etc.

**STAGE 4 – IMPACT OF PUBLIC ACCESS**

As not all sites allow or have public access upon them, so the impact caused by public access has been separated from other hazards. Where access is possible it may be statutory linear (e.g. Public Rights of Way), or area (e.g. CRoW[1] Open Access land) or may be by permissive agreement. It should be noted that people are the primary cause of the majority of incidents either deliberately or accidentally. It is therefore important to consider the amount and type of accessibility (e.g. foot, bicycle, horse, motor vehicles) and the activities undertaken (e.g. ranging from motor rallies, orienteering events, to quiet conservation walks). Where

public access is allowed the types of hazard should be identified and the risk rating should be calculated using Section 5.

***Priorities for Public Access***

The landowner, manager or tenant should consider the following:

- **Life –** their 'Duty of Care'[2] for all that enter upon their land
- **Property and business –** Facilities and income from allowing access (e.g. cafes, cycle hire, shops, car parking charges, Christmas trees etc.) that could be disrupted, damaged or destroyed.
- **Environment –** Conservation, landscape and heritage assets they may attract the public and could be damaged or destroyed.

***Control measures***

If required the following control measures should be selected to reduce the risk level to low:

- **Visitor management –** car park sizes, targeting event or activities outside the fire season, location of access points
- **Fire patrols during susceptible periods –** during heat waves or after long periods of drought
- **Appropriate awareness raising –** working in partnership with Fire and Rescue Services and neighbours

**STAGE 5 – SITE RISK RATING**

The final stage is to define the sites overall risk rating. This is defined from the highest risk rating from Stages 3 and 4. For example if two site hazards are high, but all infrastructure, assets and impacts of public access is low, the site will have a high-risk rating.

**STAGE 6 – REVIEW SETTING**

All risk assessments require a review date or period to ensure that they respond to changes on site or adjacent too as well as evolving risks. It is recommended that a review is set annually or after major land use or habitat and species change. The review should cover the previous five stages of the wildfire risk analysis.

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[1] CRoW – Countryside and Rights of Way Act 2000.

[2] With regard to the Health and Safety at Work Act 1974 and its regulations and the Occupiers Liability Act 1957 and 1984.

# 4. RISK ASSESSMENT

**RISK ASSESSMENT STEPS**

Risk assessment is the careful examination of what could cause harm to life, property and the environment, so that you can weigh up precautions need and prevent harm. The following six steps should be used when assessing risks:

**Step 1 – Identify hazards:**

- Site hazards
- Infrastructure hazards

**Step 2 – What might be harmed:**

- Life
- Property and businesses
- Environment

**Step 3 – Evaluate the risks :**

- Considering the likelihood and severity.
- Define a risk rating and decide on precautions that are proportionate to the overall risk.
- Take into consideration existing control measures and their effectiveness.

**Step 4 – Define appropriate additional control measures**:

- See Section 5 – Control Measures (Table 7) and Risk Management Control Measures Guidance
- See Stage 4 – Impact of Public Access to bring the risk level down.

**Step 5 – Re-evaluate the risk rating:**

- Use the process in Step 4 but consider the mitigation effects of the additional control measures.

**Step 6 – Define the hazards risk rating**:

- Low (1 to 5),
- Medium (6 to 10),
- High (12 to 16)
- Unacceptable (20 to 25).

**Step 7 – Review triggers:**

- Set a review date/period for your assessment.
- Monitor and review after change of land use, species or habitat

## EVALUATING RISK

By using the risk assessment matrix in Table 3, a site or management units risk rating can be calculated and one of four levels of risk defined; unacceptable, high, medium or low.

**Table 3 –** Risk assessment matrix

| | | | Likelihood | | | | |
|---|---|---|---|---|---|---|---|
| | | | Very unlikely | Unlikely | Moderate | Likely | Very likely |
| | | | 1 | 2 | 3 | 4 | 5 |
| Severity | Negligible | 1 | 1 | 2 | 3 | 4 | 5 |
| | Minor | 2 | 2 | 4 | 6 | 8 | 10 |
| | Serious | 3 | 3 | 6 | 9 | 12 | 15 |
| | Major | 4 | 4 | 8 | 12 | 16 | 20 |
| | Fatalities | 5 | 5 | 10 | 15 | 20 | 25 |

Risk rating:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1-5 | Low | 6-10 | Medium | 12-16 | High | 20-25 | Unacceptable |

### *Likelihood and severity*

A risk rating is achieved by multiplying the likelihood of a fire starting by the severity of damage. These are defined and valued in Tables 4 and 5 respectively. Severity is defined by the consequence on three priorities: life, property & businesses and environment. Where sites have more than one priority on site, they should all be assessed and the highest risk used to define the overall level of severity.

**Table 4 –** Measure of Likelihood of a fire starting (Probability)

| Level | Descriptor | Chance | Descriptor |
|---|---|---|---|
| 1 | Very unlikely | 0–20% | The event may occur only in exceptional circumstances |
| 2 | Unlikely | 21–40% | The event could occur at some time |
| 3 | Moderate | 41–60% | The event will occur at some time |
| 4 | Likely | 61–80% | The event could occur in most circumstances |
| 5 | Very Likely | 81–100% | The event will occur in most circumstances |

**Table 5 –** Measure of Severity damage (Consequence)

| Level | Descriptor | Chance | Description |
|---|---|---|---|
| 1 | Negligible | 0.005% | **Life –** Minor local first aid treatment (e.g. minor cuts/abrasions) causing minimal work interruption.<br>**Property and Business –** No financial loss or damage.<br>**Environment –** Damage to habitats and species will recover in less a year. |
| 2 | Minor | 0.05% | **Life –** Injury requiring first aid treatment causing inability to continue with current work activity for 3 days or less.<br>**Property and Business–** Minor: financial losses (up to 1% of profit), disruption and/or damage and impact on reputation.<br>**Environment –** Minor damage to habitats and species but able to recovery to previous capacity between 1 to 5 years. |
| 3 | Serious | 0.5% | **Life –** Medical treatment required. RIDDOR over 3 day lost-time injuries.<br>**Property and Business –** Serious: financial losses (up to 5% of profit), disruption or damage and impact on reputation.<br>**Environment –** Serious damage to habitats and species taking between 5 to 10 years to recovery to previous capacity. |
| 4 | Major | 5% | **Life –** Permanent or life changing injuries. RIDDOR major injuries.<br>**Property and Business –** Major: financial losses (up to 10% of profit), disruption or damage and impact on reputation.<br>**Environment –** Major damage to habitats and species taking between 10 to 20 years to recovery to previous capacity. |
| 5 | Fatalities | 50% | **Life –** Single or multiple deaths<br>**Property and Business –** Destruction of the property (total loss) or business and impact on reputation.<br>**Environment –** Irreversible impact on habitats or species. |

**RISK RATING**

The calculation should include any existing control measures in place in order to assess their effectiveness. As defined in Table 6 medium to unacceptable risk sites should use control measures to reduce the risk to low. This will require the use of mandatory and/or primary control measures, to reduce the risk. In order to ensure that control measures are implemented effectively they are defined within the four contingency phases of an incident: preparedness, prevention, response and recovery. Please see across for details on control measures.

**Table 6 –** Risk rating and control measures

| Level | Descriptor | Description |
|---|---|---|
| 4 | **Unacceptable** | Unacceptable hazard. Prescribed burning is not advised |
| 3 | **High** | Unacceptable hazard. Task/s must have control measures |
| 2 | **Medium** | Acceptable hazard but task/s is subject to control measures |
| 1 | **Low** | Acceptable hazard. Monitor hazard |

It is recommended that this process be undertaken in combination with site visits to assess individual management units and consultation with interested parties i.e. landowner, managers, tenants, neighbours, contractors, public etc.

**CONTROL MEASURES**

The use of control measures is common practice amongst organisations and part of good business management. In many cases they are integrated within other processes, documentation and operations, thus reducing costs and management burden. The risk control process requires the assessor to either eliminate, or reduce, or isolate the hazard.

Table 7 provides a matrix of mandatory and primary requirements defined by the four contingency phases: preparedness, prevention, response and recovery. Risk based control measures reduce impact by placing a stronger emphasis on preparedness and prevention before the incident to reduce or limit the likelihood and severity. This also improves the effectiveness and reduces the cost of response during the incident and recovery afterwards. Please see the guidance document Risk Management Control Measures for greater detail.

**Table 7 –** Control measures

| Contingency Phase | Control Measures | |
|---|---|---|
| | **Mandatory** | **Primary** |
| Preparedness | • Fire plans/maps | • Wildfire Management plan<br>• Species selection<br>• Design planning<br>• Prescribed fire management and operation plans*<br>• Training (prescribed fire operations)<br>• Standard Operating Procedures (SOP)<br>• Partnership working<br>• Define a competent person/s |
| Prevention | Not applicable | • Fire and fuel breaks<br>• Fire belts<br>• Vegetation fuel management practices<br>• Visitor management<br>• Fire patrols during susceptible periods<br>• Appropriate awareness raising |
| Response | Not applicable | • Improving initial attack<br>• Supporting FRS Incident Commanders<br>• Long duration incidents |
| Recovery | • Vegetation fire reporting systems | • Salvage of crops and facilities<br>• Restoration of habitats and species<br>• Rebuilding or repair of property |

Note: * Only used when prescribed burning operations are considered.

# 5. REFERENCES

CLG (2008). IRMP Steering Group Integrated Risk Management Planning: Policy Guidance – Wildfire. Communities and Local Government.

Forestry Commission (1990s). Undertaking an Environmental Impact Assessment in Forestry and preparing an Environmental Statement.

Gazzard, R. J. (2009). United Kingdom Vegetation Fire Standard (UKVFS). Data Fields and Terminology for Wildfire Incidents and Prescribed Burning Operations within Great Britain and Northern Ireland. Forest Research.

HFRS (2009). Hampshire Fire and Rescue Service – Risk Assessment Record FM/8/1/2 (NCB11/09). Hampshire Fire and Rescue Service.

Home Office (undated) Fire protection in forests and woodlands in England and Wales.

HSE (1999). Glossary of HSE terms. Health and Safety Executive.

Jackson, D. L. (2000) Report 307 Guidance on the interpretation of the Biodiversity Broad Habitat Classifications (terrestrial and freshwater types): Definition and the relationship with other classifications. Joint Nature Conservation Council.

TSO (2006). Dynamic: management of risk at operational incidents, a fire service guide. Scottish Office, Home Office and Northern Ireland Department of the Environment. 2006 Edition. The Stationary Office.

UKWAS (2008). United Kingdom Woodland Assurance Standard, Second Edition. United Kingdom Woodland Assurance Standard.

# APPENDIX A – INFRASTRUCTURE AND ASSETS

**Major Infrastructure**

Major Infrastructure adjacent to habitat type, including:

a) Transport Infrastructure

- Airport flight paths
- Motorways or important 'A roads', and
- Railways and associated facilities and structures.

b) Wayleave infrastructure:

- Overground wayleaves: e.g. power lines, communications
- Underground wayleaves: e.g. fuel pipeline, major sewers, major water pipelines

c) Buildings:

- monuments,
- listed buildings,
- residential and commercial, industrial etc.

**Environmental assets**

Areas of ecological importance, including:

a) Sites of Special Scientific Interest (SSSI)

b) Special Protection Areas (SPA)

c) Special Areas of Conservation (SAC)

d) Ramsar (Wetlands)

e) National Nature Reserves (NNR)

f) Environmentally Sensitive Areas (ESA)

g) Scheduled Ancient Monuments (SAM)

**Social assets**

a) Recreation and leisure

b) Cultural heritage

c) Aesthetic value

d) Health and wellbeing

e) Community cohesion.

**Economic assets**

a) Food, fibre and fuel produce

b) Sporting

c) Tourism

# APPENDIX B – RISK ANALYSIS TEMPLATE

**Site Name:** **Date of assessment:** / /

**FRS Site Code:** **Landowner:** **6 Figure Grid Reference:**

## Stage 1 – Priority setting

| | Who or what is at risk? |
|---|---|
| **Priority 1 – Life:** | |
| **Priority 2 – Property and Business:** | |
| **Priority 3 – Environment:** | |

## Stage 2 – Habitat and species at risk

| Habitat | Species | Risk Rating |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

## Stage 3 – Summary of risk assessment of site, infrastructure & asset hazards (Appendix D)

| Hazard | Control Measures (Existing and Additional) | Risk Rating |
|---|---|---|
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## Stage 4 – Impact of public access

| Access issues | Control Measures(Existing and Additional) | Risk Rating |
|---|---|---|
| | | |
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| | | |

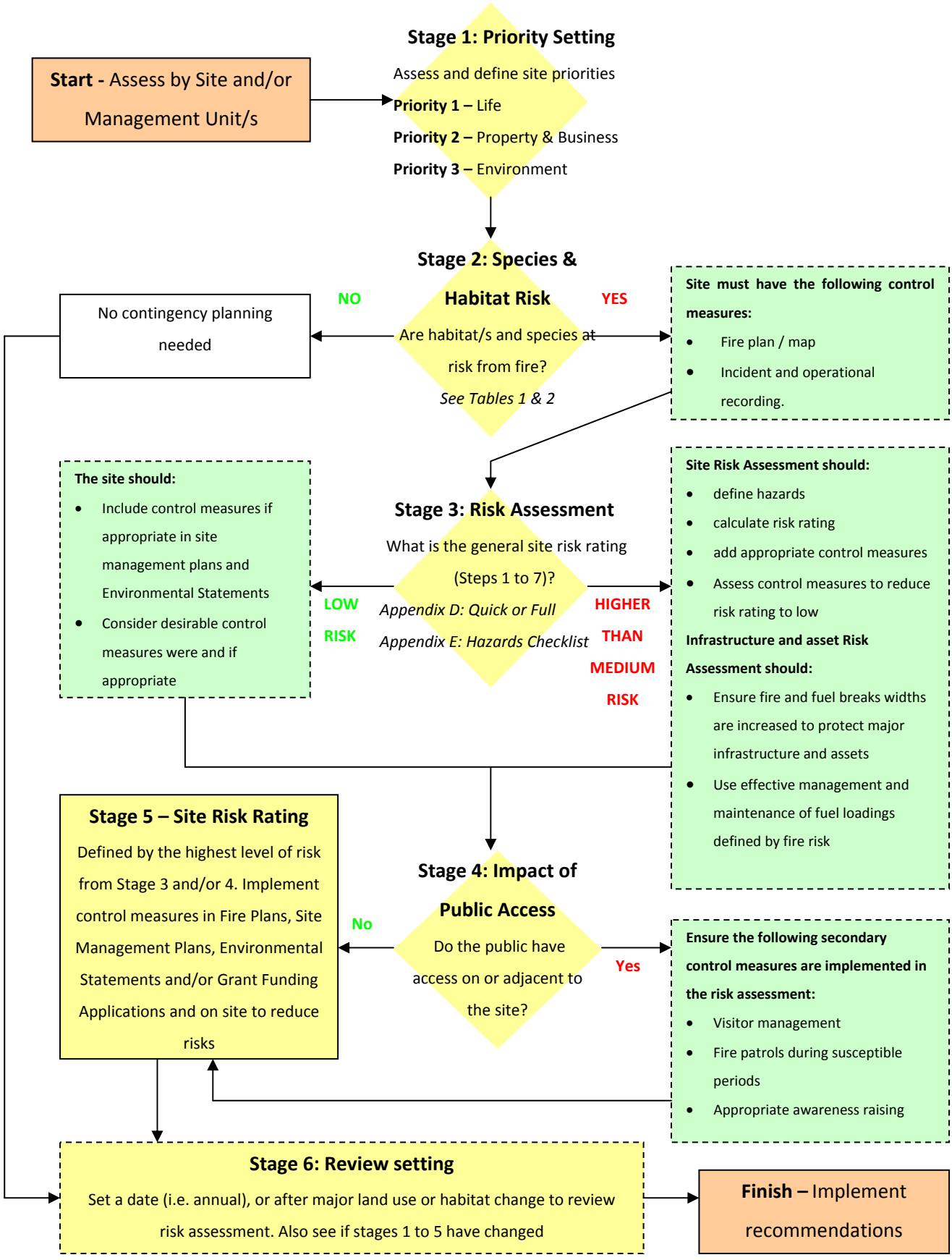
## Stage 5 – Site Risk Rating

Highest level of risk from Stage 3 and 4:

## Stage 6 – Review setting

| | |
|---|---|
| **Date of next review:** | |

# APPENDIX C – RISK ANALYSIS FLOW CHART



# APPENDIX D – RISK ASSESSMENT TEMPLATES

## Scoping Risk Assessment

**Site Name:** **Date of assessment:** / /

**FRS Site Code:** **Landowner:** **6 Figure Grid Reference:**

| Step 1 - Hazard/s (see Appendix E) | Step 2 - Who or what can be harmed? (See Stage 1 Priorities) | Step 3 - Initial Risk | | | | Step 4 – Additional Control measures | Step 5 - Review Risk | | | Step 6 – Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing Control Measures | L | S | R | | L | S | R | |
| **Site Hazards** | | | | | | | | | | |
| Site characteristics | | | | | | | | | | |
| Climate and weather | | | | | | | | | | |
| Management and Training | | | | | | | | | | |
| Land management practices | | | | | | | | | | |
| Land management activities | | | | | | | | | | |
| Other hazard: | | | | | | | | | | |
| **Infrastructure and Assets Hazards** | | | | | | | | | | |
| Risk to Buildings | | | | | | | | | | |
| Risk to Transport | | | | | | | | | | |
| Risk to Wayleaves | | | | | | | | | | |
| Risk to Environment assets | | | | | | | | | | |
| Risk to Social assets | | | | | | | | | | |
| Risk to Economic assets | | | | | | | | | | |

**Step 7 - Review date:** / /

## Full Risk Assessment

**Site Name:** **Date of assessment:** / /

**FRS Site Code:** **Landowner:** **6 Figure Grid Reference:**

| Step 1 - Hazard/s (see Appendix E) | Step 2 - Who or what can be harmed? (See Stage 1 Priorities) | Step 3 - Initial Risk | | | | Step 4 – Additional Control measures | Step 5 - Review Risk | | | Step 6 – Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Existing Control Measures | L | S | R | | L | S | R | |
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**Step 7 - Review date:** / /

# APPENDIX E – HAZARD CHECKLIST

### Site Hazards

| Risk | Hazard | Description | Yes |
|---|---|---|---|
| Site characteristics | Potential for larger than medium scale wildfires | Site is over a hectare and/or there is sufficient surrounding area to cause a larger wildfire | ☐ |
| | Possibility of wildfires from adjacent land ownership | Site is location next to species and habitats at high risk from wildfires and/or prescribed burning operations that go out of control | ☐ |
| | Wildfires increase due to no natural protection | Is the site venerability increased due to a lack of natural breaks and fire belts adjacent to or within the site | ☐ |
| | Has topographical extreme fire behaviour features | Site has topographical features (i.e. gullies, valleys or slopes) that increase the potential for extreme fire behaviour | ☐ |
| | Unexploded ordnance (UXO) | Evidence or suspected evidence of unexploded ordnance on site | ☐ |
| | Poor accessibility for fire response | Site has poor access from the highway and/or has limited internal roads and rides and/or has restrictive off road access to aid fire fighting, orienteering and locating the fire | ☐ |
| | Site has a heavy and/or complex fuel loading | Site has sufficient vegetation fuel loading to cause extreme fire behaviour | ☐ |
| | Known site for deliberate and accident fires | Site has a history of past wildfires incidents (see fire reports from your local fire and rescue service and your organisations records) | ☐ |
| Climate and weather | Exposure to weather | Site is exposed to high winds, liable to changes in direction etc. | ☐ |
| | Increase wildfire potential due to drought and heat waves | Site has suffered a period of recent intermittent, sustained drought and/or heat waves | ☐ |

| Risk | Hazard | Description | Yes |
|---|---|---|---|
| Management and Training | Poor fire training | Staff are not trained to respond to wildfire incidents or prescribed burning operations | ☐ |
| | Poor level of contingency planning | Site has no risk assessment, emergency and/or fire plan and/or control measures for vegetation fires | ☐ |
| | Poor site management planning | Site has no management plan and does it provide appropriate fire planning | ☐ |
| Land management practices | Poor level of site management | Site is not actively / effectively managed (e.g. no vegetation management, firebreak cutting etc.) | ☐ |
| | No planning for prescribed fires | There is no management design and operational planning for prescribed fire operations in the site management plan | ☐ |
| | Poor potential for early detection of wildfires | There is no or limited potential for detecting wildfires by the landowner, its users or the general public | ☐ |
| | Unmanaged site | Site has had no management undertaken for over 2 years | ☐ |
| | Use of inappropriate management practices | Such as the use of non/minimal intervention management. in woodlands | ☐ |
| | Poor on site prevention | Breaks and belt are not effective enough for the risks identified | ☐ |
| Land management activities | Possible inappropriate ignition by machinery | Vehicles and equipment used for management are likely to ignite fine fuels? (i.e. inappropriate vehicles, poor guarding of exhaust, build up of fine fuels on equipment surfaces etc.) | ☐ |
| | Poorly undertaken activities | There is poor implementation and maintenance of control measures (i.e. fire breaks) | ☐ |
| | Use of pyrotechnics and fire setting | Pyrotechnics and/or fire used on site for activities (i.e. tracer bullets, flares, fireworks, barbecues, bonfires or brash burning) | ☐ |
| | Inappropriate prescribed burning operations | Operation has not been appropriately planned, staff are not training, undertaken during inappropriate weather and season periods etc. | ☐ |

## Infrastructure and Assets Hazards

| Risk | Hazard | Description | Yes |
|---|---|---|---|
| **Risk to buildings** | | | |
| Residential, Commercial and Retail, Industrial properties | Buildings at high risk from vegetation fires | A thatched building/s is within 500m or adjacent to the site and can be impacted on by a vegetation fire? | ☐ |
| | | The building/s contain flammable / hazardous products or machinery within 500m or adjacent to the site and can be impacted on by a vegetation fire? | ☐ |
| | Life risk from vegetation fires | The site has the potential to cause a life risk to the occupants of buildings | ☐ |
| | | The property is in close proximity to vegetation (i.e. within 10m), especially ladder fuels adjacent to the structure? | ☐ |
| | | There are vulnerable persons or people (e.g. care home, hospital and retirement home) that could be adversely impacted upon by vegetation fires (i.e. air pollution, heat radiation, evacuation and stress etc.)? | ☐ |
| | Evacuation | Would a vegetation fire result in an evacuation of people from adjacent buildings? | ☐ |
| | Disruption of commercial and/or industrial businesses | The site has the potential to disrupt commercial or industrial businesses through a vegetation fire? | ☐ |
| | Impact on food and tree crops | A vegetation fire would impact on timber, woodfuel and food crops | ☐ |
| | Impact on listed buildings and monuments | A vegetation fire would impact upon listed building and/or monument? | ☐ |

| Risk | Hazard | Description | Yes |
|---|---|---|---|
| **Risk to transport** | | | |
| Airport | Flight Paths | A vegetation fire would have an impact on airport flight path (i.e. smoke restricting visibility)? | ☐ |
| | Airport infrastructure | A vegetation fire would have an impact on airport infrastructure (e.g. hangers, fuel tanks, runway lighting)? | ☐ |
| Road classes and infrastructure | Adjacent road part of the strategic road network | Fire or smoke would impact on Motorway and/or Truck Main road - A Road (T) adjacent too or within 500m of the site that could cause congestion? | ☐ |
| | Adjacent road not part of the strategic road network | Fire or smoke would impact on Non-Truck Main road - A Road and/or Secondary road (B road) adjacent too or within 500m of the site that could cause congestion? | ☐ |
| | History of smoke and/or fire impact on road classes | There are records or reports of vegetation fires adjacent to road classes | ☐ |
| | Adjacent to road side services and amenities | Fire or smoke would impact on service area or petrol stations adjacent to or within 500m of the site? | ☐ |
| | Smoke and/or fire reducing road users and service providers visibility | Fire or smoke would impact on roadside furniture (e.g. Message / Sign Gantry (variable message sign), CCTV cameras, road lightning etc.) adjacent to or within 500m of the site. | ☐ |
| Train infrastructure | Adjacent train lines part of the rail network | The site is adjacent to or within 500m of the rail network. | ☐ |
| | Smoke and/or fire reducing train driver visibility | The site adjacent to or within 500m of roadside furniture E.g. Message / Sign Gantry (variable message sign), CCTV cameras, lightning etc. | ☐ |

| Risk | Hazard | Description | Yes |
|---|---|---|---|
| **Risk to transport (continued)** | | | |
| General road and train infrastructure hazards | Extreme fire behaviour due to embankments | A fire would exhibit extreme fire behaviour adjacent to or within 500m of embankments | ☐ |
| | Smoke and/or fire restricting vision or damaging structures | Fire and smoke impact on structures (e.g. bridges, barriers, underpasses, acoustic barrier, fences, surface cabling etc.) adjacent to or within 500m of the site. | ☐ |
| Strategic impacts | Delaying FRS | A vegetation fire (i.e. smoke and/or fire) would delay FRS response to incidents. | ☐ |
| **Impact on wayleaves** | | | |
| Underground and Overground Wayleaves | Vegetation fire would have an impact on powerlines | Fire, smoke and water media fire suppression would have an impact upon powerlines | ☐ |
| | Vegetation fire would have an impact on communication | Fire, smoke and water media fire suppression would have an impact upon communications | ☐ |
| | Vegetation fire would have an impact on petrol lines | Fire, smoke and fire suppression would have an impact upon petrol lines | ☐ |
| | Vegetation fire would have an impact on sewers | Fire, smoke and fire suppression would have an impact upon sewers | ☐ |
| | Vegetation fire would have an impact on water catchment areas | Runoff from a fire or fire suppression would adversely impact upon water quality from a water catchment areas (i.e. near reservoirs or Environment Agency defined zones) | ☐ |
| | Vegetation fire would have an impact on water pipes | Fire, smoke and fire suppression would have an impact upon water pipes? | ☐ |
| | Vegetation fire would have an impact on wayleave infrastructure | Fire, smoke and fire suppression would have an impact on wayleave infrastructure, such as sub stations, maintenance buildings etc.? | ☐ |

| Risk | Hazard | Description | Yes |
|---|---|---|---|
| **Risk to social assets** | | | |
| Recreation and Leisure | Public access | Is the site accessible by the public, especially during bank and school holidays (especially spring and summer)? | ☐ |
| | Level of public access | Are there more than 10,000 visitors a year to the site? | ☐ |
| | Accessibility | Does the site have Public Rights of Way (PRoW) adjacent too or across it? | ☐ |
| | | Does Open Access Land (CRoW) or permissive access increase site risk? | ☐ |
| Cultural heritage | Heritage designations | Is there a risk to ancient monuments? | ☐ |
| Aesthetic value | Landscape character | Is there a risk to National Park/s or Area of Outstanding Natural Beauty (AONB)? | ☐ |
| Health and wellbeing | Evacuation | Is there a risk of evacuation from adjacent properties? | ☐ |
| | Health | Is there a risk of ash/smoke causing respiratory illnesses (onsite and within 1km)? | ☐ |
| **Risk to economic assets** | | | |
| Impact on Economic Assets | Impact on sustainable natural resources | Would a fire impact on site food, timber and biofuel products as well as wind turbines/farms etc.? | ☐ |
| | Impact on sporting | Would a fire impact on sporting benefits? | ☐ |
| | Impact on tourism | Would a fire impact on tourism benefits? | ☐ |
| | Impact on neighbouring assets? | Would a fire have an impact upon neighbouring economic assets? | ☐ |
| **Risk to environmental assets** | | | |
| Nature conservation | Impact on conservation, landscape and heritage assets? | Would fire impact on nature conservation, landscape and heritage designations (i.e. SSSI, SPA, SAC, Ramsar and SAM)? | ☐ |
| Priority Habitats and Species | Impact on priority species and habitats? | Would fire impact on Priority Habitats and Species? | ☐ |

# APPENDIX H – FIRE MAP DETAILS

**Logistics and communications –** i.e. main roads, two and four-wheel drive route, dead ends, hard standing etc.

**Habitat risk rating –** i.e. Using Tables 1 and 2 provided in the toolkit define a simple, clear and intuitive system to define to risk presented by habitats and species e.g.:

| | | |
|---|---|---|
| Young Conifer Plantation | = Dark green solid fill | = High Risk |
| Other Conifer Plantation | = Dark green hatched fill | = Low Risk |
| Broadleave Woodland | = Light green hatched | = Low Risk |
| Lowland heath | = Purple solid fill | = High Risk |

**Site hazards and risk factors –** Site hazards i.e. slope, valleys, exposure to weather, drought sensitive, effectiveness of land management and operations.

Risk factors i.e. major infrastructure (transport, property and under/over ground wayleaves), and assets (environmental, social and economic) etc.

Spatially these hazards can be either or a combination of area, linear and point hazards (e.g. Unexploded Ordnance (UXO), power lines/pylons electric sub stations etc.).

**Orientation features –** i.e. local place names, numbered or referenced access points (AP) and rendezvous points (RVP), referenced orientation bollards etc.

**Water supplies –** i.e. hydrants, open water, rivers, steams and emergency supplies etc.

**Site and land owner details –** i.e. duty officer contact details, site details, important warning notices (e.g. UXO, grazing livestock) etc.

**Map legend -** i.e. the relevant items listed above, map scales (miles, kilometres and hectares), Ordnance Survey grid references (six figure), site reference names number, date of map etc.

# GLOSSARY AND ABBREVIATIONS

| | |
|---|---|
| **Contingency planning** | A pre-established plan to mitigate an unusual situation which has the potential for harm, which incorporates the best use of local as well as remote facilities and resources. |
| **Contingency phases** | The four contingency phases are preparedness, prevention, response and recovery. |
| **Control measures** | An intervention technique to reduce risk. This could include the use of PPE, specialist equipment, working practices etc. |
| **Duty of care** | Health and Safety at Work Act 1974 and its regulations and the Occupiers Liability Act 1957 and 1984. A common duty of care is a duty to take such care as in all the circumstances of the case is reasonably safe in using the premises for the purposes for which he is invited or permitted to be there. |
| **Emergency** | An event or situation which threatens serious damage to human welfare in a place in the UK, the environment of a place in the UK, or the security of the UK or of a place in the UK. |
| **Environmental Impact Assessment (EIA)** | EIA's main aim is to ensure that the authority giving the primary consent (the competent authority i.e. Forestry Commission England) for a particular project makes its decisions in the knowledge of any likely significant effects on the environment. |
| **Fire Suppression** | All the work and activities connected with fire-extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished. |
| **Harm** | This includes death, physical or mental ill health, damage to property, loss of production/service, or any combination of these. |
| **Hazard** | Something with the potential to cause harm (1).<br>Accidental or naturally occurring (i.e., nonmalicious)<br>event or situation with the potential to cause death or physical or psychological harm, damage or losses to property, and/or disruption to the environment and/or to economic, social and political structures. |
| **Impact** | The scale of the consequences of a **hazard**, **threat** or emergency expressed in terms of a reduction in human welfare, damage to the environment and loss of security. |

| | |
|---|---|
| **Incident** | Event or situation that requires a response from the emergency services or other responders Note: emergency (or major incident) refers to a specific type of incident requiring special deployment by one or more category 1 responder. |
| **Likelihood** | Chance of something happening, whether defined, measured or estimated objectively or subjectively, or in terms of general descriptors (such as rare, unlikely, almost certain), frequencies or mathematical probabilities. |
| **Major Incident** | Event or situation requiring a response under one or more of the emergency services' major incident plans. |
| **Multiagency** | Involving the participation of several agencies Note: frequently used interchangeably with interagency or joint–agency. |
| **Preparedness** | Process of preparing to deal with known risks and unforeseen events or situations that may have the potential to result in an emergency. |
| **Preparedness phase** | Ongoing phase focussed on preparedness for emergencies and disasters. |
| **Prescribed burning** | Controlled application of fire to vegetation in either their natural or modified state, under specified environmental conditions which allow the fire to be confined to a predetermined area and at the same time to produce the intensity of heat and rate of spread required to attain planned resource management objectives (prescribed fire). Please note this term has replaced the earlier term "Controlled Burning". |
| **Prevention** | Actions to avoid an incident, to intervene for the purpose of stopping an incident from occurring, or to mitigate an incident's effect to protect life and property. Includes measures designed to mitigate damage by reducing or eliminating risks to persons or property, lessening the potential effects or consequences of an incident |
| **Recovery** | Process of rebuilding, restoring and rehabilitating the community following an **emergency** or **disaster**, continuing until the disruption has been rectified, demands on services have been returned to normal levels, and the needs of those affected have been met. |

| | |
|---|---|
| **Recovery phase** | Phase focussed on recovery, commencing at the earliest opportunity following the onset of an emergency, and running in tandem with the response phase. |
| **Response** | Decisions and actions taken in accordance with the strategic, tactical and operational objectives defined by emergency responders. At a high level these will be to protect life, contain and mitigate the impacts of the **emergency** and create the conditions for a return to normality. See also **preparedness** and **recovery**. |
| **Response phase** | Phase in which decision making and actions are focused on response to an actual emergency or disaster. |
| **Risk** | A measure of the likelihood that the harm from a particular hazard will occur, taking into account the possible severity of the harm. |
| **Risk Management** | The process of analysing the level of risk, considering those in danger, and evaluating whether hazards are adequately controlled, taking into account any existing control measures. |
| **Risk Assessment** | A careful consideration by competent people of the hazard associated with a task. The potential effect of each hazard, how severe it might be and the likelihood of its occurring, should be considered to determine the effort required to make the work site as safe as reasonably possible. |
| **Severity** | Measure of the possible consequences of the **hazard.** |
| **Site Management Plans** | The long-term planning of land uses. Ideally planning integrates a range of site constraints including, but not exclusive to: recreation and access, biodiveristy, heritage, landscape, crop production etc. |
| **Vegetation Fires** | A fires that uses vegetation as the main fuel source. Includes wildfire incidents and prescribed burning, as well as the use of suppression fires. |
| **Wildfire** | Any unplanned and uncontrolled fire which regardless of ignition source may require suppression response, or other action according to agency policy. |